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ABSTRACT

This is the teacher's manual to accompany part 2 of the workbook for grade 2 pupils in the Comprehensive Instructional Management System, a teacher-designed unified mathematics curriculum for kindergarten through grade 7. It is composed of a curriculum, a testing component, and a computer-managed reporting system. The curriculum is organized into modules of similar skills or understandings from 14 topics. Each module has: a suggested period of duration for student mastery; a listing of new skills to be mastered by the student in the form of performance objectives; a section devoted to vocabulary, terms, and symbols; getting-started activities on prerequisite skills in preparation for undertaking new objectives; strategies for teaching the new skills; and student activities for providing reinforcement for the newly learned objective. After the sequence of modules and content by topic are displayed, teaching suggestions for 66 modules on 127 performance objectives are given. The content is from the topics of: numbers and numeration; addition; subtraction; multiplication; division; fractions; geometry; measurement; algebraic concepts; graphs, probability, and statistics; and problem solving, plus review. Pages from the student's workbook are interspersed with the suggested activities. (MNS)

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CIMS

COMPREHENSIVE INSTRUCTIONAL MANAGEMENT SYSTEM

A Cyclical Mathematics Curriculum

PART 2—TEACHER

SE 045 514

NEW YORK CITY BOARD OF EDUCATION
OFFICE OF CURRICULUM DEVELOPMENT AND SUPPORT
DIVISION OF CURRICULUM & INSTRUCTION

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FOREWORD

The Comprehensive Instructional Management System (CIMS) is a unified mathematics curriculum for grades K-7. The curriculum is cyclical in design, and reflects the most recent New York City and New York State guidelines.

Utilizing the experience of our system's teachers, we have developed a teacher-designed curriculum that includes a rich selection of classroom-tested successful mathematics activities. The major goal of the CIMS mathematics project is to provide the classroom teacher with a well-structured, objective-based curriculum. All objectives are supported by a variety of strategies. Student mastery of these objectives is readily diagnosed through the system's testing component.

The curriculum format is structured to allow the teacher to determine the ability level of the students in the topic under study, and to permit the students to move forward at their individual rates. Each module of instruction provides the teacher with a set of related performance objectives. These objectives are supported by activities which probe and develop the students' readiness to undertake new skills and concepts. Further reinforcement is given to mastery of the objectives through accompanying student workbooks.

It is hoped that this curriculum will not only assist teachers in developing vital mathematics instruction, but will serve to expand and enrich students' mathematics skills.

Charlotte Frank

Charlotte Frank,
Executive Director
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ACKNOWLEDGMENTS

The Comprehensive Instructional Management System (CIMS) was developed as a project of the Division of Curriculum and Instruction, Charlotte Frank, Executive Director. Dr. Peter Negroni, Community School Superintendent CSD 12; Dr. Harvey Garner, Community School Superintendent CSD 18; Carlos Edwards, Community School Superintendent CSD 23, and Joseph Pacheco, Community School Superintendent CSD 32 supervised the overall development of the CIMS program within their respective districts.

Morris Freedman, Director of the Office of Curriculum Development and Support; Irwin Kaufman, Director of Mathematics; Kenneth Bates, Director of CIMS; Maria DeSalvio, Assistant Director of Mathematics; Arthur Flug and Doreen Genkin, Assistant Directors of CIMS and Gene Menchini, Program Manager, Distributive Systems, Office of Data Processing Coordination provided overall supervision of this project.

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TABLE OF CONTENTS

LEVEL 2

Introduction.. xi

Topic Tab Key....................................... xiii

Instructional Sequence Description.................. xiv

Instructional Sequence.............................. xv

Content by Topic.................................... xviii

Table of Symbols.................................... xxi

Metric Table.. xxii

Equipment Checklist................................. xxiii

INTRODUCTION

The Comprehensive Instructional Management System (CIMS) is a teacher-designed educational delivery system composed of a curriculum, a testing component and a computer managed reporting system.

Designed to support mathematics instruction in the classroom, CIMS provides a comprehensive cyclical mathematics curriculum for grades K through 7. Each manual describes the curriculum for a single level or grade. Teacher curriculum developers from elementary, intermediate and senior high schools utilized the most current New York City and New York State guidelines in formulating the curriculum's modules and sequence.

Curriculum Topics

The CIMS mathematics curriculum has been organized into the following 14 topics:

.01	Numbers and Numeration
.02	Addition of Whole Numbers
.03	Subtraction of Whole Numbers
.04	Multiplication of Whole Numbers
.05	Division of Whole numbers
.06	Fractions
.07	Decimals
.08	Integers
.09	Geometry
.10	Measurement
.11	Algebraic Concepts
.12	Graphs, Probability, Statistics
.13	Problem Solving
.14	Review

Modules of Instruction

The CIMS curriculum is organized into modules or groupings of similar skills or understandings. Each module has a suggested period of duration for student mastery, a listing of new skills to be mastered by the student in the form of performance objectives, a section devoted to vocabulary, terms and symbols, getting started activities which serve as prerequisite skills in preparation for undertaking new objectives, strategies for teaching the new skills and student activities for providing reinforcement for the newly learned objective. Note that the lesson duration is included only as a guideline to the teacher for planning purposes. The actual time required for each module will vary from class to class and from child to child depending on the needs of the students and the teacher's judgment.

Priorities of Performance Objectives

There is an order of priority to be recognized in teaching the content presented in the CIMS NEW YORK CITY MATHEMATICS CURRICULUM. Performance objectives with the greatest priority are so basic that unless the student acquires a satisfactory degree of competency in them, the student cannot progress. Such topics are marked A and mastery by all pupils is essential.

Performance objectives marked B are required to be presented to all students. Mastery is not expected at this time. These objectives will be developed further and reinforced later.

Performance objectives marked C are of special interest. These should be taught to increase positive attitudes towards mathematics.

Summary: A - Mastery of this objective is essential for progress. Opportunities for reinforcement should be provided throughout the school year.

B - These objectives are to be taught to all pupils. Mastery is not essential at this time because the topics will be further developed and reinforced.

C - Objectives of special interest.

Topic Tab Key

01. Numbers and Numeration

02. Addition of Whole Numbers

03. Subtraction of Whole Numbers

04. Multiplication of Whole Numbers

05. Division of Whole Numbers

06. Fractions

07. Decimals

08. Integers

09. Geometry

10. Measurement

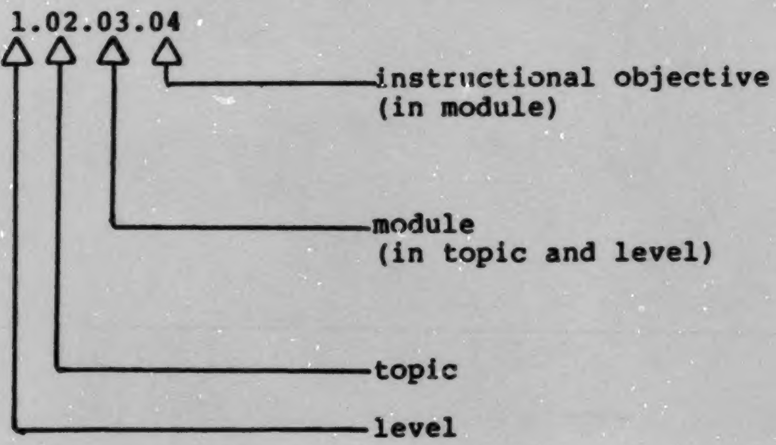
11. Algebraic Concepts

12. Graphs, Probability, Statistics

13. Problem Solving

14. Review

Module Coding Key


1.02.03.04
instructional objective
(in module)
module
(in topic and level)
topic
level

INSTRUCTIONAL SEQUENCE DESCRIPTION

An instructional sequence is given in list form on the following pages for this level. The sequence has been arranged to reflect what is considered the most effective presentation of the mathematics curriculum. Each module in the list is described by its unit number, module number, title, and page location.

The CIMS tests are integrated within the manual sequence. The test number is located in the first column. Each test is designed to assess priority objectives from the preceding modules. The tests are used to determine student mastery of specific performance objectives within these modules and appear in a multiple choice format. Each performance objective code number preceded by an * indicates that the performance objective is not tested on a CIMS test.

4

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INSTRUCTIONAL SEQUENCE - LEVEL 2

TEST NUMBER	UNIT NUMBER	MODULE NUMBER	TITLE	PAGE NUMBER
	1	2.14.01	Recognize and name whole numbers 0 through 100	1
	2	2.01.01	Count hundreds through ten hundred (1000)	2
	3	2.01.02	Read and write standard numerals (100 through 1000)	3
	4	2.01.03	Count by tens and fives to 1000	4
2.01	5	2.01.04	Relation symbols =, <, >	5
	6	2.09.01	Points, lines, line segments, and rays around us	6
	7	2.14.02	Addition and subtraction facts	7
	8	2.11.01	Open sentences	8
	9	2.01.05	Place value through 999	9
	10	2.01.06	Ordinal numbers tenth through thirty-first.	10
2.02	11	2.10.01	Time - months and years	11
	12	2.09.02	Explore properties of a rectangle, square, triangle, and circle	13
	13	2.13.01	Guess and check	15
	14	2.02.01	Addition of 2- and 3-digit numbers without regrouping	16
	15	2.10.02	Quarters, half dollars	18
	16	2.03.01	Subtraction through 3-digit numbers without regrouping	19
2.03	17	2.01.07	Round numbers through 99 to the nearest ten	21
	18	2.10.03	Temperature - Celsius and Fahrenheit thermometers	22
	19	2.02.02	Addition of 3-digit numbers without regrouping	23
	20	2.02.03	Addition of 2- and 3-digit numbers using expanded notation without regrouping	25
2.04	21	2.13.02	Locate information	26

REVISED
INSTRUCTIONAL SEQUENCE - LEVEL 2

TEST NUMBER	UNIT NUMBER	MODULE NUMBER	TITLE	PAGE NUMBER
	22	2.10.04	Linear measure - inch and foot.............	28
	23	2.10.05	Linear measure - meter, decimeter and centimeter...........................	30
	24	2.06.01	Fractions: fifths, sixths and tenths.......	31
	25	2.10.06	Money - dollars............................	32
	26	2.02.04	Addition of a 2-digit number and a 1-digit number with regrouping (ones to tens).................................	33
	27	2.03.02	Subtract a 1-digit number from a 2-digit number with regrouping..................	34
	28	2.12.01	Probability - predict and tally outcomes...	35
2.05	29	2.12.02	Data - collect, tabulate, arrange and compare in tables........................	36
	30	2.13.03	Use data...................................	37
	31	2.01.08	Identify and write Roman numerals I-XII....	38
	32	2.10.07	Dozen and half dozen.......................	39
	33	2.10.08	Money - make change through the value of a dollar............................	40
	34	2.12.03	Bar graphs.................................	41
2.06	35	2.01.09	Odd and even numbers.......................	42
	36	2.04.01	Multiplication facts for twos through 10...	43
	37	2.05.01	Introduction to division...................	44
	38	2.05.02	Division facts for twos through 10.........	45
	39	2.10.09	Linear measurement - half inch.............	46
2.07	40	2.04.02	Multiplication facts for fives through 25..	47
	41	2.05.03	Division facts for fives through 25........	48
	42	2.10.10	Cup, pint, quart...........................	49
	43	2.02.05	Addition of 2-digit numbers with regrouping ones to tens..................	50

REVISED
INSTRUCTIONAL SEQUENCE - LEVEL 2

TEST NUMBER	UNIT NUMBER	MODULE NUMBER	TITLE	PAGE NUMBER
	44	2.03.03	Subtraction of 2-digit numbers with regrouping..............................	51
	45	2.01.10	Count forward and backward by patterns of three................................	52
	46	2.04.03	Multiplication facts for threes through 15.	53
	47	2.05.04	Division facts for threes through 15.......	54
	48	2.09.03	Attributes of three-dimensional objects....	55
2.08	49	2.09.04	Symmetry...................................	56
	50	2.13.04	Patterns...................................	57
	51	2.12.04	Arrangements - use 2-5 items...............	58
	52	2.02.06	Addition of 2-digit and 3-digit numbers with regrouping (ones to tens)...........	59
	53	2.02.07	Commutative and associative properties of addition through 999..................	60
	54	2.03.04	Properties of subtraction..................	61
	55	2.10.11	Weight - gram and kilogram.................	62
	56	2.10.12	Weight - ounce, pound......................	63
	57	2.13.05	Missing information........................	64
	58	2.01.11	Count forward and backward by patterns of four.........................	65
2.09	59	2.04.04	Multiplication facts for fours to 20.......	66
	60	2.05.05	Division facts for fours through 20........	67
	61	2.10.13	Time - quarter hour, minutes and seconds...	68
	62	2.06.02	Identify fractional parts of a number of things..............................	69
	63	2.04.05	Commutative property of multiplication.....	70
	64	2.05.06	Division/multiplication as inverse operations..............................	71
	65	2.12.05	Ratio - 2:1 correspondence.................	72
2.10	66	2.10.14	Deciliter..................................	73

REVISED
CONTENT BY TOPIC
LEVEL 2

Topic 01: **Numbers and Numeration**

2.01.01 Count hundreds through ten hundred (1000) 2
2.01.02 Read and write standard numerals (100 through 1000) 3
2.01.03 Count by tens and fives to 1000 4
2.01.04 Relation symbols =, <, > 5
2.01.05 Place value through 999 9
2.01.06 Ordinal numbers tenth through thirty-first 10
2.01.07 Round numbers through 99 to the nearest ten 21
2.01.08 Identify and write Roman numerals I - XII 38
2.01.09 Odd and even numbers 42
2.01.10 Count forward and backward by patterns of three 52
2.01.11 Count forward and backward by patterns of four 65

Topic 02: **Addition of Whole Numbers**

2.02.01 Addition of 2- and 3-digit numbers without regrouping 16
2.02.02 Addition of 3-digit numbers without regrouping 23
2.02.03 Addition of 2- and 3-digit numbers using expanded notation without regrouping 25
2.02.04 Addition of a 2-digit number and a 1-digit number with regrouping (ones to tens) 33
2.02.05 Addition of 2-digit numbers with regrouping ones to tens 50
2.02.06 Addition of 2-digit and 3-digit numbers with regrouping (ones to tens) 59
2.02.07 Commutative and associative properties of addition through 999 60

REVISED

CONTENT BY TOPIC

LEVEL 2

Topic 03: Subtraction of Whole Numbers

2.03.01 Subtraction through 3-digit numbers without regrouping.................... 19
2.03.02 Subtract a 1-digit number from a 2-digit number with regrouping........ 34
2.03.03 Subtraction of 2-digit numbers with regrouping............................ 51
2.03.04 Properties of subtraction............... 61

Topic 04: Multiplication of Whole Numbers

2.04.01 Multiplication facts for 2's through 10. 43
2.04.02 Multiplication facts for 5's through 25. 47
2.04.03 Multiplication facts for 3's through 15. 53
2.04.04 Multiplication facts for 4's through 20. 66
2.04.05 Commutative property of multiplication.. 70

Topic 05: Division of Whole Numbers

2.05.01 Introduction to division................ 44
2.05.02 Division facts for twos through 10...... 45
2.05.03 Division facts for fives through 25..... 48
2.05.04 Division facts for threes through 15.... 54
2.05.05 Division facts for fours through 20..... 67
2.05.06 Division/multiplication as inverse operations............................ 71

Topic 06: Fractions

2.06.01 Fractions: fifths, sixths and tenths.... 31
2.06.02 Identify fractional parts of a number of things...................... 69

Topic 09: Geometry

2.09.01 Points, lines, line segments, and rays around us........................ 6
2.09.02 Explore properties of a rectangle, square, triangle, and circle.......... 13
2.09.03 Attributes of three-dimensional objects. 55
2.09.04 Symmetry................................ 56

Topic 10: Measurement

2.10.01 Time - months and years................. 11

REVISED

CONTENT BY TOPIC

LEVEL 2

2.10.02 Quarters, half dollars.................. 18
2.10.03 Temperature - Celsius and Fahrenheit thermometers.......................... 22
2.10.04 Linear measure - inch and foot.......... 28
2.10.05 Linear measure - meter, decimeter and centimeter........................ 30
2.10.06 Money - dollars......................... 32
2.10.07 Dozen and half dozen.................... 39
2.10.08 Money - make change through the value of a dollar........................... 40
2.10.09 Linear measurement - half inch.......... 46
2.10.10 Cup, pint, quart........................ 49
2.10.11 Weight - gram and kilogram.............. 62
2.10.12 Weight - ounce, pound................... 63
2.10.13 Time - quarter hour, minutes and seconds................................ 68
2.10.14 Deciliter............................... 73

Topic 11: Algebraic Concepts

2.11.01 Open sentences.......................... 8

Topic 12: Graphs, Probability and Statistics

2.12.01 Probability - predict and tally outcomes................................ 35
2.12.02 Data - collect, tabulate, arrange and compare in tables..................... 36
2.12.03 Bar graphs.............................. 41
2.12.04 Arrangements - use 2-5 items............ 58
2.12.05 Ratio - 2:1 correspondence.............. 72

Topic 13: Problem Solving

2.13.01 Guess and check......................... 15
2.13.02 Locate information...................... 26
2.13.03 Use data................................ 37
2.13.04 Patterns................................ 57
2.13.05 Missing information..................... 64

Topic 14: Review

2.14.01 Recognize and name whole numbers 0 through 100............................. 1
2.14.02 Addition and subtraction facts.......... 7

2.10.05 LINEAR MEASURE-METER, DECIMETER AND CENTIMETER

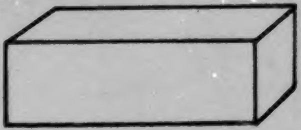
(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.10.05.01A measure objects using a meter stick and its subdivisions (cm/dm);

e.g.,



How many centimeters long?

2.10.05.02B recognize that 100cm = 1m and each cm = $\frac{1}{100}$m;

e.g.,

Measure a part of the chalkboard ledge. Count the markings on a meter stick.

2.10.05.03C compare centimeters, decimeters and meters using equivalent measures;

e.g.,

100 centimeters = 1 meter
10 decimeters = 1 meter

2.10.05.04A solve story problems related to skills learned in this module.

e.g.,

Sara's plant was 5cm tall in April. In May it was 12cm tall. How many centimeters did the plant grow?

2.10.05

VOCABULARY	SYMBOLS
meter	m
centimeter	cm
decimeter	dm

GETTING STARTED

Prepare and distribute sticks of various lengths. Ask students to measure their math book, pencil and notebook and record the lengths using the terms longer than, shorter than or about the same length as a specific number of sticks. Say, "Why did everyone get different results?" (Different units result in different measurements.)

Distribute sticks of the same length. Ask the students to measure the same objects and record their answers. Say, "Why did we all get the same results?" (The unit of measure is standard.)

Arrange various lengths of twisted and curled cord on the bulletin board. Display a straight length of cord to be used as the measuring unit. Ask the students to estimate the lengths of the various cords. Record student estimates for each of the twisted or curled cords. Unravel each cord for students to measure against the original straight cord. Make sure that the cord is lined up properly. Say, "Is this cord longer than, shorter than or the same size as the straight cord?" Repeat for each length of cord. Compare the actual measurements to the estimate.

2.10.05

2.10.05.01 **measure objects using a meter stick and its subdivisions (cm/dm)**

STRATEGY 1: Prepare string or yarn for each student and meter sticks for each group of students. Display the meter stick and say, "The meter is a unit of metric measure." Ask a student to stand. Ask if the student is taller or shorter than the meter stick. Say, "Take the string and wrap it around your waist. Line up the string along the meter stick. The length of the string from the left end of the meter stick to the number where the string ends is your waist measurement. Notice that the meter stick has centimeter and decimeter markings. The centimeter markings are smaller than the decimeter markings." Ask the students to work with a partner to measure their waists and record the measurements in centimeters and decimeters.

Repeat this procedure measuring other parts of the body.

STRATEGY 2: Prepare a meter stick for each student using the corresponding worksheet. Provide scissors, oak tag, and glue. Display a meter stick and say, "A meter stick can be used to measure meters, centimeters and decimeters." Show the subdivisions. Ask the students to measure various classroom objects in centimeters, decimeters and/or meters. Instruct them to record their results on a chart.

e.g.,

Object	Estimate	Unit of Measure
Length of desk top		
Height of desk		
Height of teacher's desk		
Width of classroom door		

2.10.05

2.10.05.02 recognize that 100cm = 1m and each cm = $\frac{1}{100}$m

STRATEGY 1: Prepare ten 10 centimeter oak tag rulers. Display a meter stick. Say, "We can measure objects in meters or centimeters. What would you measure using a meter stick? (large objects) What would you measure using a centimeter ruler? (small objects) If we wanted to measure an object in meters would we use a centimeter ruler?" (We could, but it would take a longer time to measure the object.)

Draw a line measuring one meter on the chalkboard. Say, "This line is one meter long. Let's see how many centimeters long it is. Use the centimeter rulers to measure the line. How many centimeter rulers did you use? (10) How many centimeters in all? (100) 100cm = 1m. Each cm = $\frac{1}{100}$ of a meter." Draw lines of various lengths on the chalkboard. Ask individual students to measure each line using the meter stick and centimeter rulers.

STRATEGY 2: Display a meter stick and say, "Each mark on the meter stick is equal to one centimeter. How many centimeters are in one meter?" Ask several students to count the markings on the meter stick to show that there are 100 centimeters in one meter and each centimeter equals $\frac{1}{100}$ of a meter. Write a list of various objects on the chalkboard, e.g. width of the desk, height of the door, height of a person, width of an easel... Ask individual students to measure each object by counting the centimeters on the meter stick. Each answer should be written in centimeters, e.g., width of a desk = 85cm.

2.10.05

2.10.05.03 **compare centimeters, decimeters and meters using equivalent measures**

STRATEGY 1: Prepare and distribute ten white colored rods, one orange colored rod and a centimeter ruler to each student. Say, "The white rod is one centimeter and the orange rod is one decimeter. (Write the words centimeter and decimeter on the chalkboard.) Match the white rods to the orange rod to see how many centimeters equal one decimeter." (10 centimeters = 1 decimeter) Display a piece of chalk, looseleaf paper, and an eraser. Say, "Which unit, centimeter or decimeter, would you use to measure the chalk? ...paper? ...eraser?" Distribute these objects and say, "Estimate the length of each object and then actually measure the objects. Record your estimates as well as your measurements."

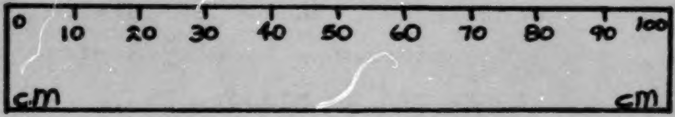
STRATEGY 2: Ask a student to draw a line on the chalkboard that is one meter long using a meter stick. Show the centimeter markings on the meter stick. Say, "How many centimeters are there in one meter?" Write 100cm = 1m on the chalkboard. Ask a student to draw a line on the chalkboard that is 1cm long. Point to the decimeter markings on the meter stick and say, "These are called decimeters. How many decimeters equal one meter?" (10) Write 10dm = 1m on the chalkboard. Ask a student to draw a line on the chalkboard that is 1dm long. Use the meter stick to compare meters, centimeters and decimeters, e.g., How many centimeters are in five decimeters? (50) How many decimeters are in 80 centimeters? (8)

2.10.05

2.10.05.04 **solve story problems related to skills learned in this module**

STRATEGY 1: Tape an oak tag meter stick to the chalkboard. Say, "Freddie the Frog loved to hop around Frogville. One day Freddie wanted to see his friend Sam so he started hopping around town looking for him. He started at zero cm and landed on 10cm.

e.g.,



He could not find Sam, so he took another hop and landed on 20cm. Still no Sam. He hopped around some more until he got very tired and landed on 50cm. He still didn't find Sam. How many centimeters did Freddie hop that day? (50cm) Did he hop more than or less than one meter?" (less) Repeat this procedure with other Freddie the Frog stories.

STRATEGY 2: Say, "Tony and Jose were having an argument. Tony and Jose each thought that his grasshopper could jump the farthest. The boys decided to have a contest. They made a mark for a starting point. Both grasshoppers jumped. Here are their marks."

e.g.,

Tony's ______________
Jose's ___________

Ask students to guess how far the grasshoppers jumped. Ask a student to make the actual measurement. Say, "Tony's grasshopper jumped 5cm. Jose's grasshopper jumped 4cm. Whose grasshopper won? How much farther did Tony's grasshopper jump than Jose's?"

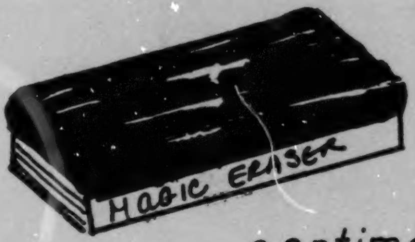
Repeat this procedure with similar story problems.

P.O. 2.10.05.01

NAME: ______________________ CLASS: ________ DATE: ________

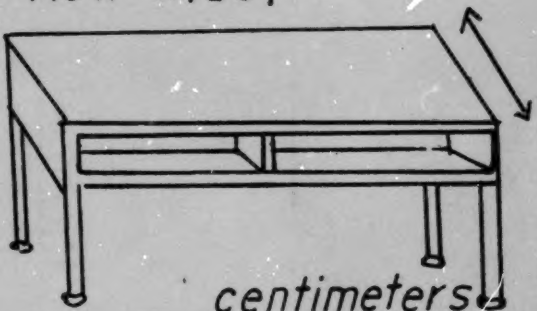
Fill in the blanks.

① How long?


MAGIC ERASER

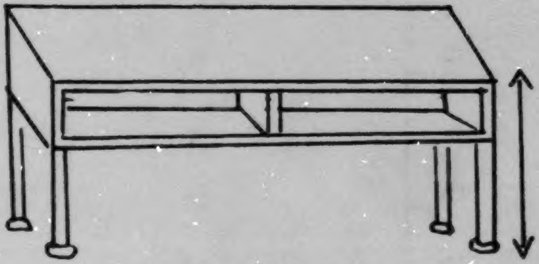
___centimeters

② How wide?



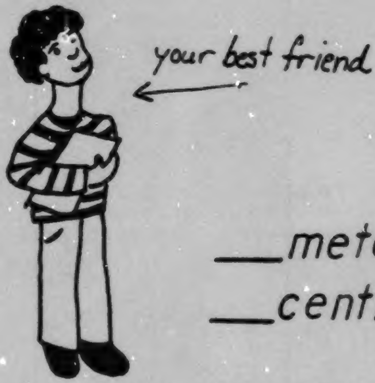
___centimeters

③ How tall?



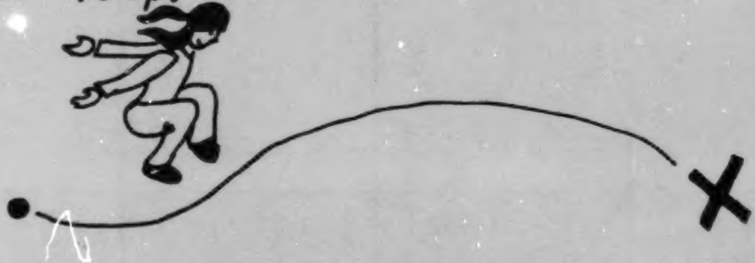
___centimeters

④ How tall?


your best friend

___meters
___centimeters

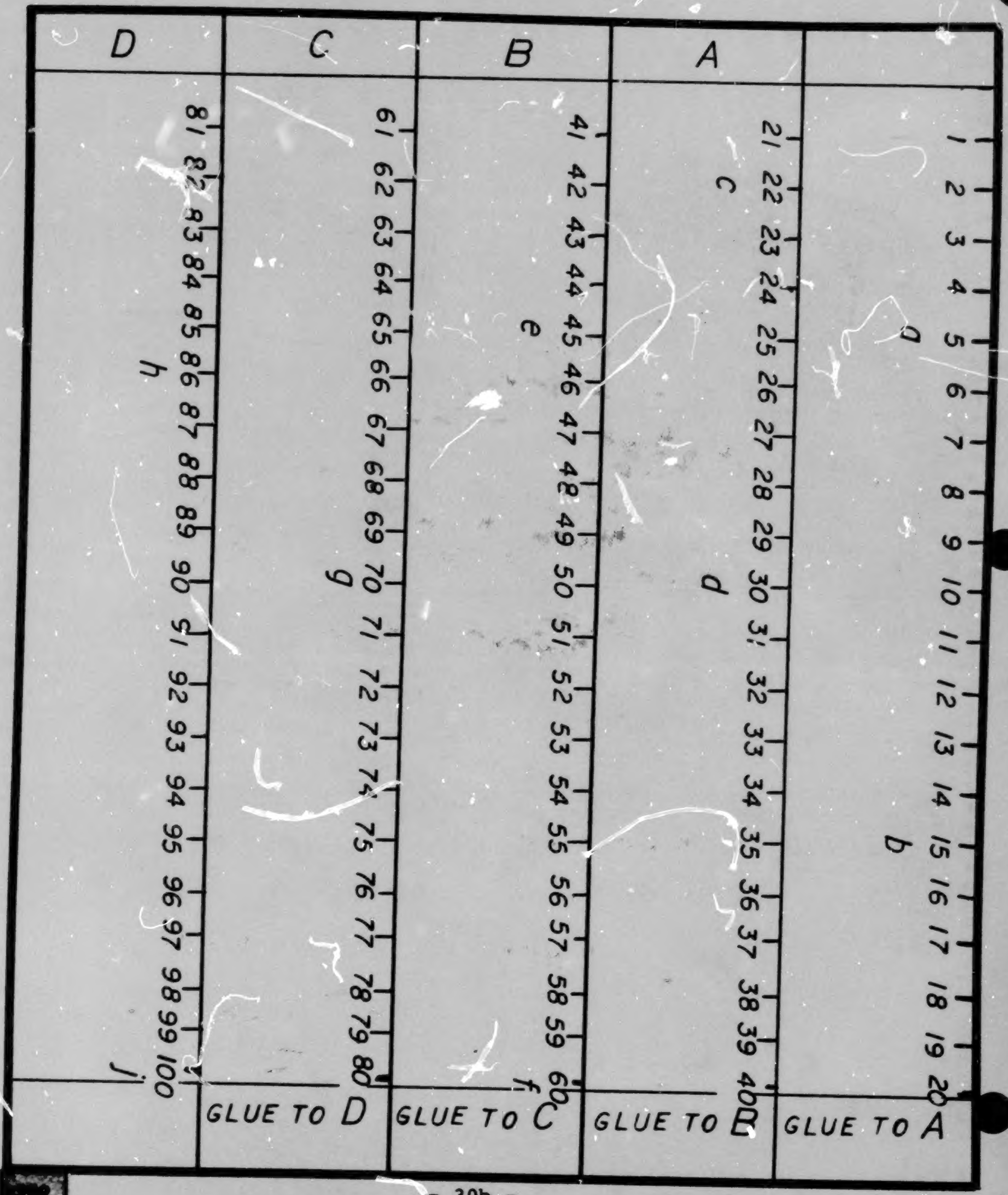
⑤ Stand, mark your space, then take a big jump. Have a friend help you measure your leap.



P.O. 2.10.05.02

NAME: ______________________ CLASS: __________ DATE: ________

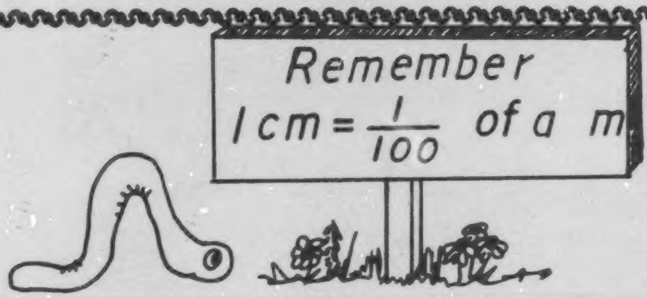
Cut out each strip of paper. Glue them together to make a meter stick.


D
C
B
A
81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
a
b
c
d
e
f
g
h
j
GLUE TO D
GLUE TO C
GLUE TO B
GLUE TO A

P.O. 2.10.05.02

NAME: ____________________ CLASS: __________ DATE: ________

Follow the directions as given below.


Remember
1 cm = $\frac{1}{100}$ of a m

Identify each of the markings a through j on the meter stick.

a. 5 cm or $\frac{5}{100}$

b. 15 cm or ☐

c. ☐ or $\frac{22}{100}$

d. 30 cm or ☐

e. 45 cm or ☐

f. ☐ or $\frac{60}{100}$

g. 70 cm or ☐

h. ☐ or $\frac{86}{100}$

j. ☐ or $\frac{100}{100}$

Use your meter stick to measure the following objects. Write your answers using cm for centimeters.

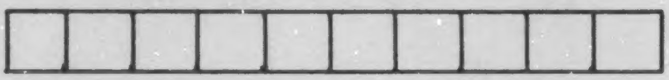
1. Your desk is _____ going across.
2. Your notebook is _____ long.
3. The door is ____ wide.

P.O. 2.10.05.03

NAME:________________________ CLASS:__________ DATE:________

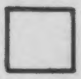
Measure each object in decimeters and centimeters.
Fill in each blank.

This is one decimeter.



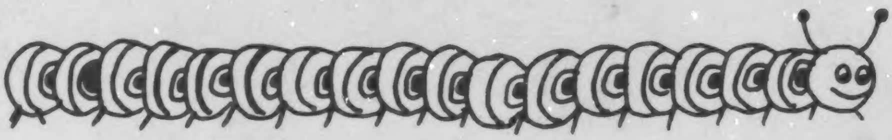
dm

This is one centimeter.

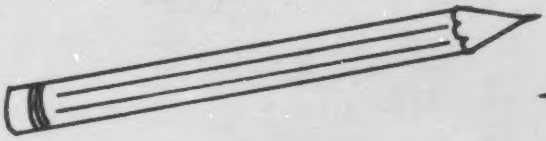


cm

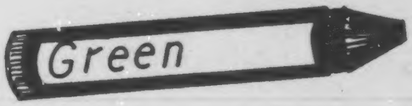
Which is larger? cm or dm



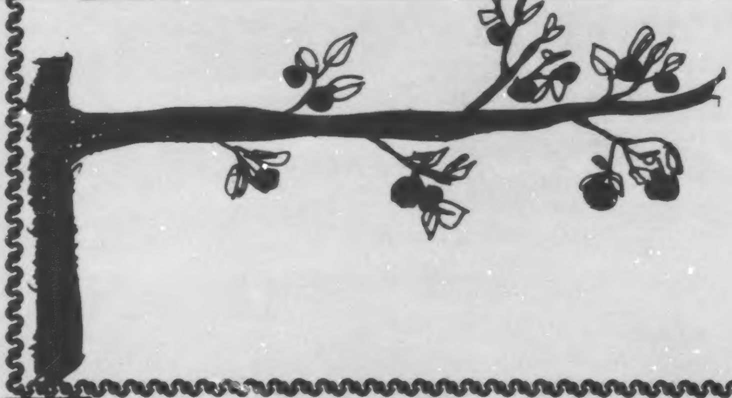
___dm___cm



___dm ___cm



___dm ___cm



___dm ___cm

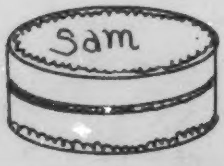
P.O. 2.10.05.04

NAME: ______________________ **CLASS:** ________ **DATE:** ______

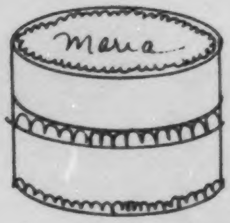
Solve each problem.

Maria and Sam each baked a cake. Measure to see whose is **taller.**

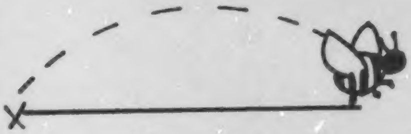
____cm



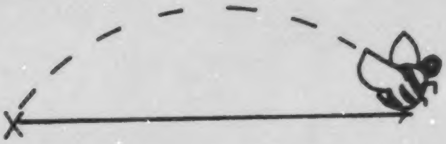
____cm



Bumble Bee made two jumps Which was longer?



____cm



____cm

Joe built a playhouse in his backyard. He wanted to buy a door for it. How should he measure the door?

____centimeters ___meters

Joe wanted to measure how far it was from the playhouse to his house. What will he use to measure?

_____centimeters ___meters

2.06.01 FRACTIONS: FIFTHS, SIXTHS AND TENTHS

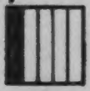
(2-3 lessons)

PERFORMANCE OBJECTIVES

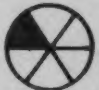
The student will be able to...

2.06.01.01A recognize that when an object is separated into parts of equal size, each part may be written as a unit fraction of the whole object;

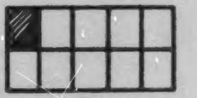
e.g.,



$\frac{1}{5}$



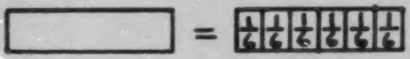
$\frac{1}{6}$



$\frac{1}{10}$

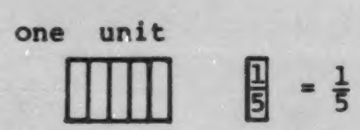
2.06.01.02A separate a concrete object into fifths, sixths, and tenths and identify the parts as equal;

e.g.,



2.06.01.03A identify and write fractional notation for fifths through $\frac{5}{5}$, sixths through $\frac{6}{6}$ and tenths through $\frac{10}{10}$;

e.g.,



2.06.01.04A solve story problems related to skills learned in this module.

e.g.,

If a pie is to be shared equally by five students, what part will each student get?

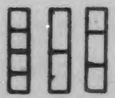
Each student will get $\frac{1}{5}$ of the pie.

2.06.01

VOCABULARY

TERMS	SYMBOLS
equal to	=
one-fifth	$\frac{1}{5}$
one-sixth	$\frac{1}{6}$
one-tenth	$\frac{1}{10}$
value	

GETTING STARTED

Draw these three granola bars on the chalkboard,  . Say, "Susan was playing with John at his house. John's mother came home with a granola bar for John. She didn't know that Susan was visiting. She divided the granola bar into two parts so that Susan and John could each have one half of the granola bar. Who can point to the granola bar that is cut into halves?"

Repeat this activity to show thirds and fourths, emphasizing that the parts must always be of equal size.

Distribute two sheets of paper to each student. Say, "Fold one sheet of paper into two equal parts and color one of the parts." Write $\frac{1}{2}$ on the chalkboard. Say, "Two tells the number of parts that are the same size and one tells the number of parts being used. What fraction can we call the shaded part of the paper?" ($\frac{1}{2}$)

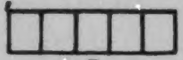
Repeat this procedure using the second sheet of paper folded into four equal parts.

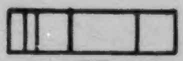
2.06.01

2.06.01.01 **recognize that when an object is separated into parts of equal size, each part may be written as a unit fraction of the whole object**

STRATEGY 1: Draw this diagram on the chalkboard.

e.g.,


I


II

Say, "How many parts are there in figure I?" (5) Ask a student to shade in one part of Figure I. Say, "How many parts are there in figure II?" (5) Ask another student to shade in one part of Figure II. Say, "Does the shaded part of figure I show $\frac{1}{5}$? Why? (Yes, the figure is divided into 5 equal parts.) Does the shaded part of Figure II show $\frac{1}{5}$? Why not?" (The parts are not equal.)

Repeat this procedure for $\frac{1}{6}$ and $\frac{1}{10}$.

STRATEGY 2: Prepare and distribute to each student yellow construction paper cut into fifths, blue paper cut into sixths, and red paper cut into tenths. Ask five students to bring one piece of yellow paper to the front of the room. Say, "Put the pieces together. What do you get? (a whole piece of paper) What fractional part of the whole is each student's piece? ($\frac{1}{5}$) Label each of your yellow pieces of paper with the fraction, $\frac{1}{5}$." Demonstrate by writing $\frac{1}{5}$ in crayon on a model taped to the chalkboard.

Repeat this procedure for sixths and tenths.

2.06.01

2.06.01.02 **separate a concrete object into fifths, sixths, and tenths and identify the parts as equal**

STRATEGY 1: Display on a flannel board a circle which has been pre-cut into fifths. Separate the circle to show each fifth. Say, "How many parts make up this circle? (5) Are the parts the same size? We call each part one fifth." Repeat this procedure using a rectangle which has been pre-cut into fifths. Students may need to place each fifth in a stack to be certain that the parts are equal.

Repeat this procedure for sixths and tenths.

STRATEGY 2: Prepare and distribute three straws and a pair of scissors to each student. Prepare three straws which have been cut into fifths, sixths and tenths respectively. Hold up one straw and say, "We are going to separate a whole straw into equal parts." Tape the straw separated into fifths on the chalkboard. Say, "Into how many pieces has this straw been cut? (5) What can you tell us about these pieces? (They are all the same size.) We call each piece one fifth. Cut your straws into fifths (five equal parts)." Distribute sample straw lengths to help the students measure. Say, "How many parts do you have? Are they the same length? What do we call each part?"

Repeat this procedure for sixths and tenths.

2.06.01.03 identify and write fractional notation for fifths through $\frac{5}{5}$, sixths through $\frac{6}{6}$, and tenths through $\frac{10}{10}$

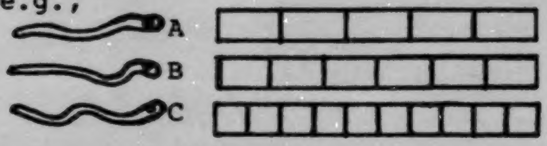
STRATEGY 1: Draw a figure with five equal parts on the chalkboard. Label the parts as you say, "Each part equals one fifth. How many fifths are there altogether? (5) How can we write five-fifths?" ($\frac{5}{5}$)

Prepare sheets with geometric figures divided into fifths. Distribute one sheet and a crayon to each student. Say, "Color as many parts of each figure as you'd like." Elicit that if three parts were colored the fractional name is $\frac{3}{5}$. Ask a student to show his/her paper and say, "How many parts make the whole shape? How many parts did you color? Name the fractional part you colored. Label the part you colored."

Repeat this procedure for sixths and tenths.

STRATEGY 2: Draw three worms on the chalkboard.

e.g.,



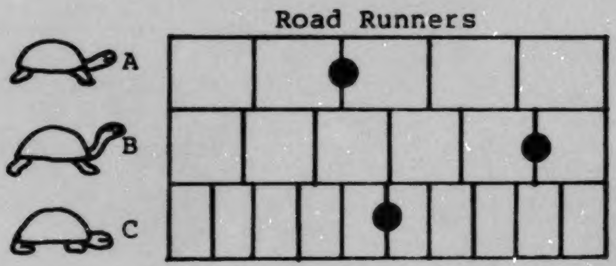
Say, "Three worms crawled in three separate races. Worm A crawled in a fifths race, Worm B in a sixth race and Worm C in a tenths race." Point to Worm A's race course and say each fractional part, e.g., $\frac{1}{5} \ldots \frac{5}{5}$. Indicate the fractional parts of the race courses for Worms B and C. Shade in $\frac{2}{5}$, $\frac{4}{6}$ and $\frac{3}{10}$ on the race courses. Say, "What part of the whole race has each worm crawled?" Record each answer. Repeat this procedure by shading different fractional parts. Continue until each fraction has been identified.

2.01.06.04 solve story problems related to skills learned in this module

STRATEGY 1: Draw a rope separated into five equal parts on the chalkboard. Say, "Jack cut $\frac{3}{5}$ of the rope to use for his dog's collar. Who can shade the part that he used? What fractional part of the rope was used? What part was not used? Into how many parts is the rope separated? Are all of the parts equal? What is each part called?" $(\frac{1}{5})$

Repeat this procedure using word problems involving sixths and tenths.

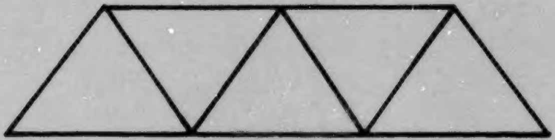
STRATEGY 2: Draw the following chart on the chalkboard. e.g.,



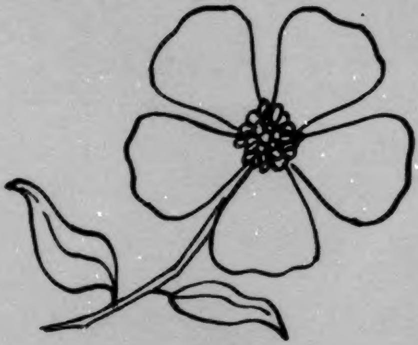
Say, "Three turtles are in the road race. How far does each turtle need to move to reach the dot in their lane?" Ask the students to count the fractional parts in each lane. Ask several students to shade in each lane to the dot. Say, "Turtle A reached its dot. How far did Turtle A move?" Repeat this procedure for Turtles B and C and then with other fractional parts of fifths, sixths and tenths by moving the dot in each lane.

P.O. 2.06.01.01

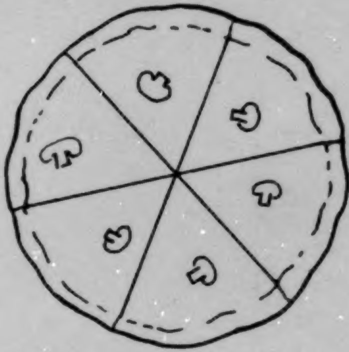
NAME: ______________________________ CLASS: __________ DATE: ________



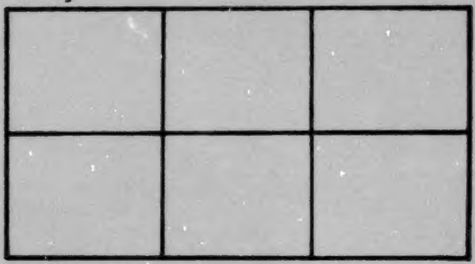
Shade $\frac{1}{5}$



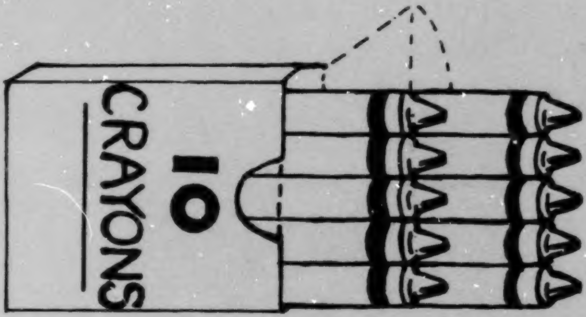
Shade $\frac{1}{5}$



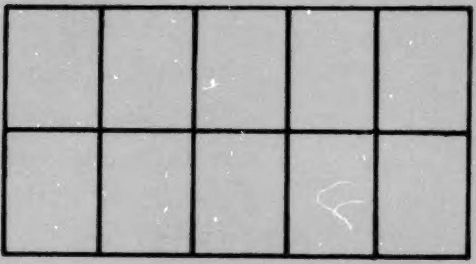
Shade $\frac{1}{6}$



Shade $\frac{1}{6}$



Shade $\frac{1}{10}$

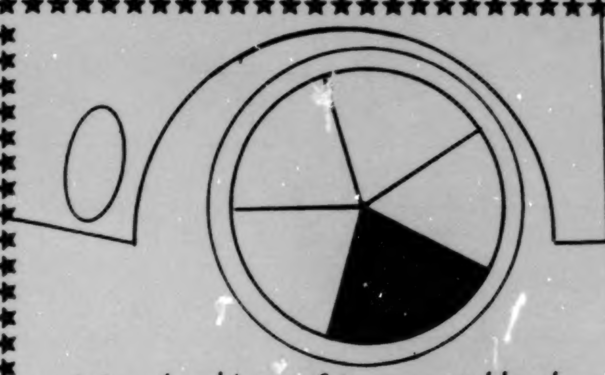


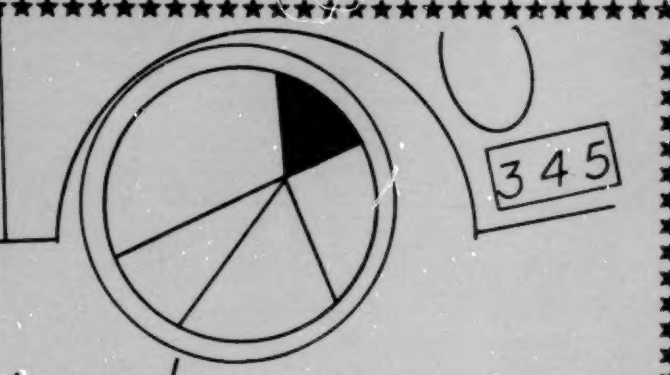
Shade $\frac{1}{10}$

P.O. 2.06.01.02

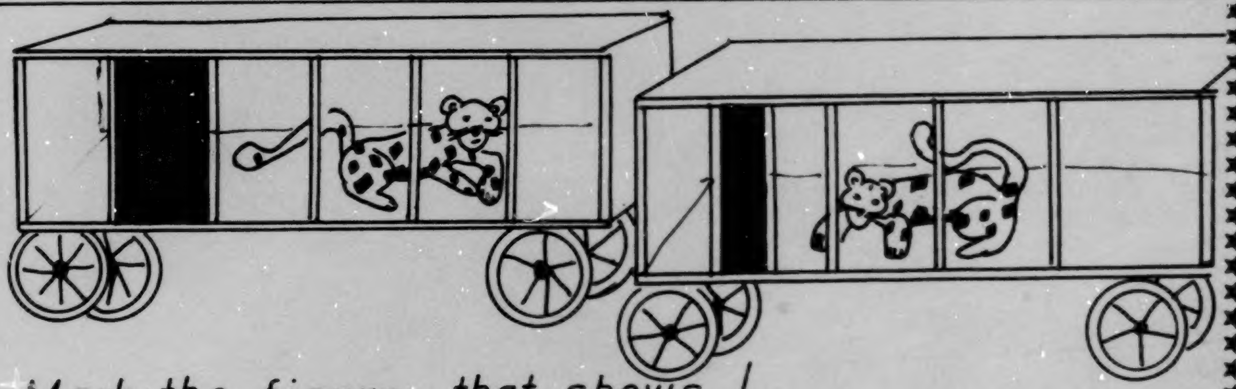
NAME: ____________________ **CLASS:** ________ **DATE:** ________

Follow the directions.

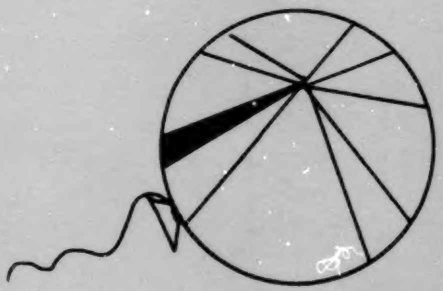


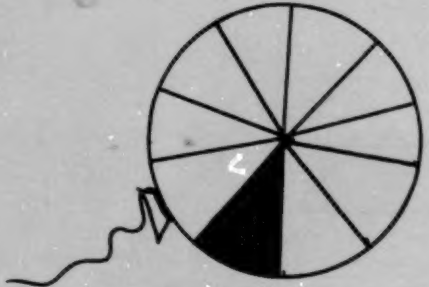


Mark the figure that shows $\frac{1}{5}$.



Mark the figure that shows $\frac{1}{6}$.



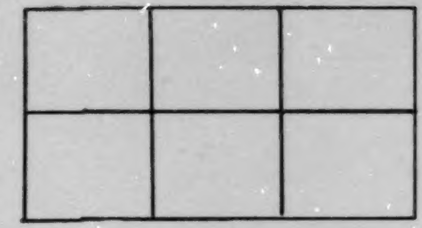


Mark the figure that shows $\frac{1}{10}$.

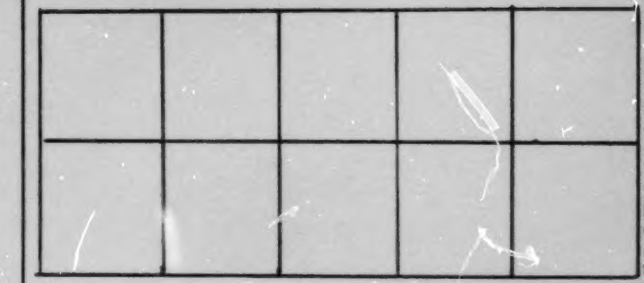
P.O. 2.06.01.02

NAME: ______________________ CLASS: __________ DATE: ________

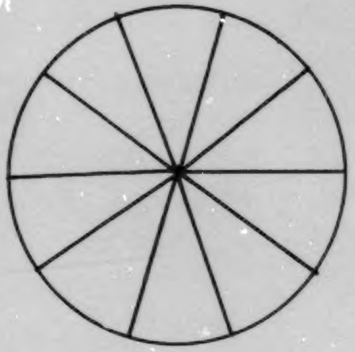
Color the fraction.



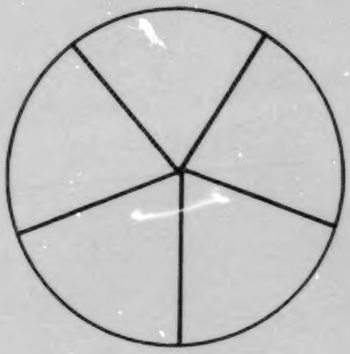
$\frac{1}{6}$



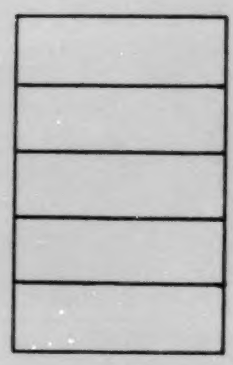
$\frac{1}{10}$



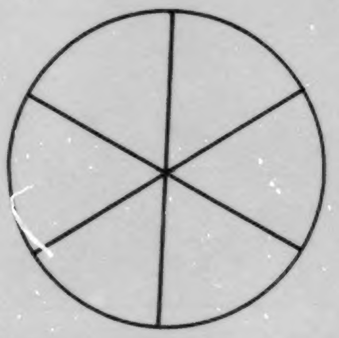
$\frac{1}{10}$



$\frac{1}{5}$



$\frac{1}{5}$



$\frac{1}{6}$

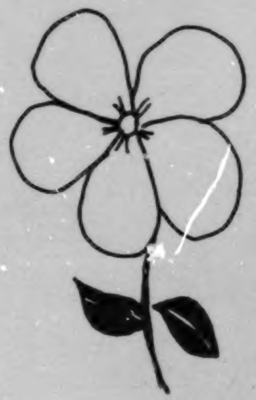
P.O. 2.06.01.03

NAME: ______________________ CLASS: __________ DATE: ________

Follow the directions.

Color $\frac{2}{5}$ of the flower blue.

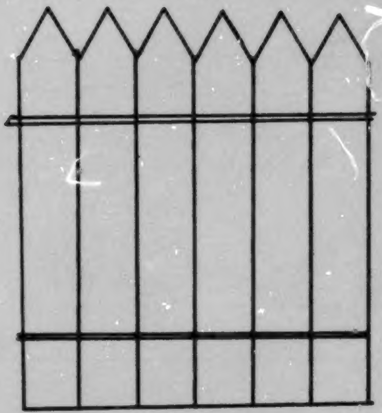
Color $\frac{1}{5}$ of the flower yellow.

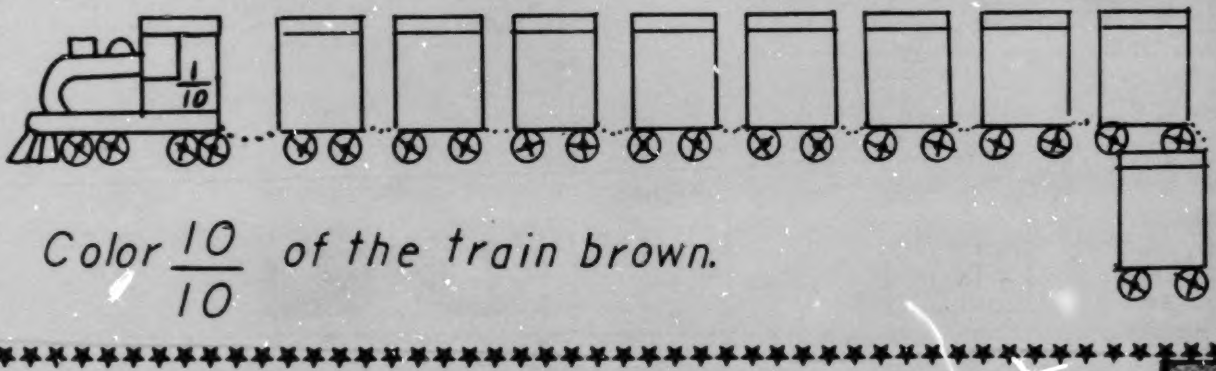


Color $\frac{1}{6}$ of the fence red.

Color $\frac{2}{6}$ of the fence green.

Color $\frac{3}{6}$ of the fence yellow.





Color $\frac{10}{10}$ of the train brown.

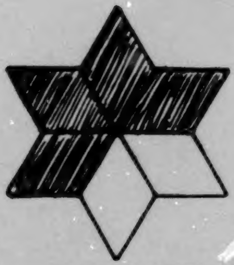
P.O. 2.06.01.04

NAME:________________________ CLASS:__________ DATE:________

Solve each story problem. Write the correct answer in each box.

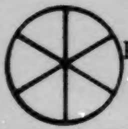
John made a design.
He colored $\frac{4}{6}$ of the design.
What part of the design is not colored?

$\frac{2}{6}$



1.

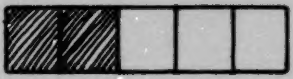
James ordered a pizza. He had the pizza cut into 6 equal pieces. What is each part called?



____

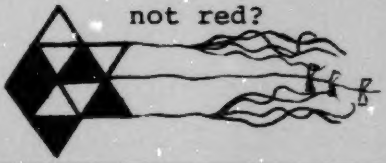
2.

Mary divided her granola bar into 5 equal parts. She ate $\frac{2}{5}$, what part did she save?



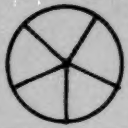
3.

Jerry has a kite. $\frac{5}{10}$ of the kite is red. What part is not red?



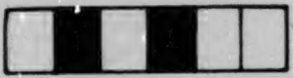
4.

If a cake is to be shared equally by 5 students, what part will each student get?



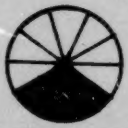
5.

Melissa divided a rectangle into 6 equal parts. She colored $\frac{2}{6}$ of the rectangle. What part is not colored?



6.

Mother cut a pie into 10 equal pieces. Dad ate $\frac{3}{10}$. What part of the pie is left?

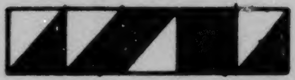


7.

Harold ate 1 part of a granola bar that was divided into 6 equal parts. What part does he have left?

8.

Mrs. Johnson colored $\frac{6}{10}$ of her design. What part is not colored?



Unit 25

2.10.06 MONEY - DOLLARS

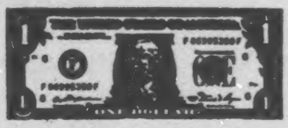
(3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.10.06.01A write the decimal point and dollar sign to show one dollar symbolically;

e.g.,



= $1.00 In value

2.10.06.02A identify the value of a dollar bill as 100¢;

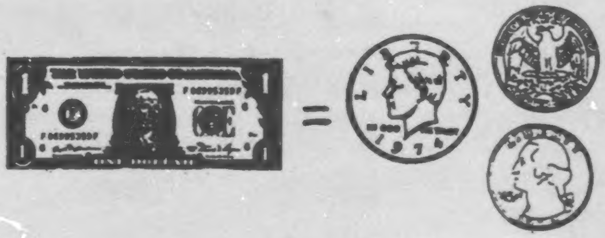
e.g.,

100 pennies = one dollar

2.10.06.03B show equivalent values of a dollar bill;

e.g.,

In value



2.10.06.04C transpose a given amount from the word form using the dollar sign, decimal point, and numbers.

e.g.,

In value one dollar and sixty-five cents = $1.65

2.10.06

VOCABULARY

TERMS	SYMBOLS
dollar	$
decimal point	

GETTING STARTED

Prepare and place toy money in small plastic bags. Each bag should have different coin combinations. Place these bags in a large box.

Say, "We are going to have a contest. Each pair of students will pick one bag from the box. You will count the coins in that bag to see who has the greatest amount. To make it easier for you to keep track of your coins, keep a chart. The winner is the pair with the most money."

e.g.,

Quarters	Dimes	Nickels	Pennies	Amount
1	2	3	2	62¢

Prepare your own classroom sales flier or bring in consumer circulars from local stores. Say, "If you had 50¢, could you buy a can of juice from this store?" Be sure the prices given match the prices listed on the circulars.

2.10.06

2.10.06.01 **write the decimal point and dollar sign to show one dollar symbolically**

STRATEGY 1: Display a dollar bill. Write 58¢ and 99¢ on the chalkboard. Ask the students to read each amount. Say, "This symbol, ¢, stands for cents." Write $1.00 on the chalkboard and say, "This is how we write one dollar. The $ is called a dollar sign. The number one tells the number of dollars and the decimal point separates the dollars and the cents. The .00 means zero cents or no cents. Write $1.00 in your notebook and draw a picture of the dollar bill."

STRATEGY 2: Distribute a representative dollar bill to each student. Allow time for the students to examine the bill and then say, "How much money is this bill worth?" Write one dollar on the chalkboard. Say, "There is another way we can write one dollar. We can show it like this: $1.00. The $ is the symbol for dollars and the . or decimal point separates the dollars from the cents."

2.10.06.02 **identify the value of a dollar bill as 100¢**

STRATEGY 1: Prepare play dollar bills. Display a dollar bill and say, "Who can tell us what this is? A dollar bill is worth 100¢. When we want to write one dollar we can write it as 100¢ or we can write it as $1.00." Tape the dollar bill on the chalkboard and write one dollar, 100¢, $1.00.

STRATEGY 2: Prepare a flannel board with cutouts of a dollar bill, a dollar ($) sign, and 100 pennies. Display the dollar bill and say, "Who can tell us what this

STRATEGY 2: cont'd

is? Do you know how many cents a dollar has?" (100¢) Place the $ sign cutout on the flannel board and say, "This is a symbol for a dollar. It's called a dollar sign."

2.10.06.03 **show equivalent values of a dollar bill**

STRATEGY 1: Prepare toy money representing pennies, nickels, dimes, quarters, half-dollars and dollar bills. Display a dollar bill. Say, "What is this? What does a dollar bill equal? (100 pennies) A dollar bill can be exchanged for coins and still have the same value." Pick up a dime and say, "What value does this dime have? (10 cents) How many tens are there in 100? (ten) How many dimes will equal a dollar?" Count the value of dimes, e.g., 10 cents, 20 cents, 30 cents, through 100 cents or one dollar. Show a quarter and say, "What is the quarter worth? (25¢) We can count quarters to make $1.00, e.g., 25¢, 50¢, 75¢, 100¢ or one dollar." Repeat this procedure for half-dollars.

STRATEGY 2: Display a flannel board with cutouts of a dollar bill, 100 pennies, 20 nickels, 10 dimes, 4 quarters and 2 half-dollars. Display the dollar bill on the flannel board and say, "What is this? This bill is one way of showing the amount of 100¢ or one dollar. We can also show this amount by using coins." Display a penny and say, "If we counted pennies starting with one penny how many pennies would equal one dollar?" Display the cutouts of 100 pennies placed next to the dollar bill. Show the nickel cutouts and say, "If we count nickels, starting with 5¢ through 100¢, how many nickels would equal 100¢?" Count to 100 by fives to show

STRATEGY 2: cont'd

20 nickels equal one dollar. Place the group of 20 nickels on the flannel board under the 100 pennies. Continue this procedure for dimes, quarters and half-dollars. Make a list of equivalent values on the chalkboard.

e.g.,

one dollar = 100 pennies
= 20 nickels
= 10 dimes
= 4 quarters
= 2 half-dollars
= 10 nickels and 5 dimes
= 1 quarter, 5 dimes and 5 nickels...

2.10.06.04 **transpose a given amount from the word form using the dollar sign, decimal point, and numbers**

STRATEGY 1: Write various amounts of money on sentence strip paper, e.g., one dollar and seventy-five cents, one dollar and twenty cents, one dollar and fifteen cents, one dollar and forty-five cents. Tape one strip at a time to the chalkboard. Say, "Who will read this for us? Who can write the amount in numbers? How many dollars are there? How many cents are there? Use a dollar sign and a decimal point." ($1.75) Repeat this procedure with the other sentence strips.

STRATEGY 2: Prepare toy money in coins and dollar bills. Distribute a dollar bill and several coins to each student. Write the following amount on the chalkboard, e.g., one dollar and fifteen cents. Say, "Show this amount with your money. Write the amount on paper. Remember to use a dollar sign and a decimal point. The decimal point is used to separate the dollars and the cents."

Repeat this procedure by asking the students to count a neighbor's money.

P.O. 2.10.06.01

NAME:______________________________________CLASS:_________DATE:_______

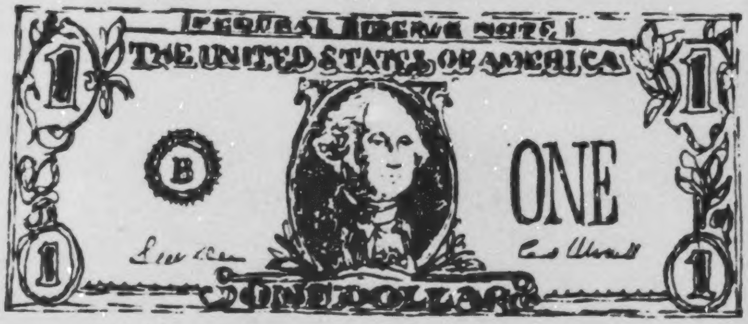
Write the value using a dollar sign ($) and a decimal point (.).

dollars	dimes	pennies
1	0	0

= $ ___.___

---

100 ¢ = ______


FEDERAL RESERVE NOTE
THE UNITED STATES OF AMERICA
1
B
ONE
ONE DOLLAR

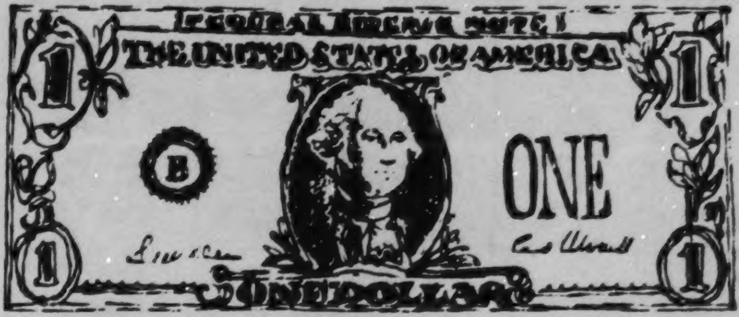
= ______

P.O. 2.10.06.02

NAME: ______________________________ CLASS: __________ DATE: ________

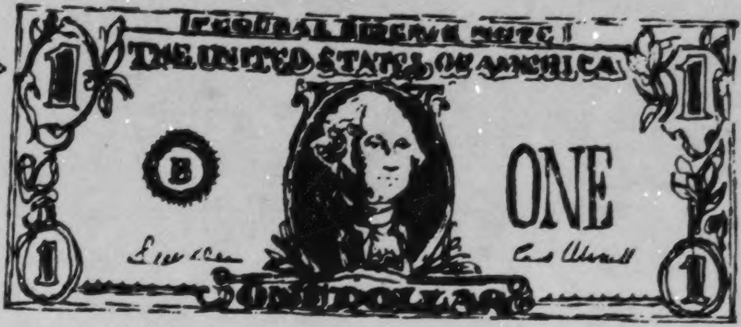
Circle the correct answer.

1. What is this?



one dollar
quarter
dime

2. How many pennies will equal→

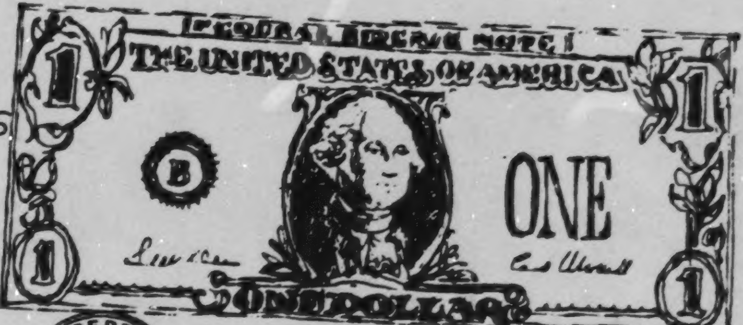


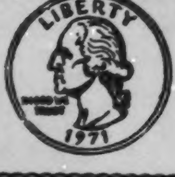
100
50
20

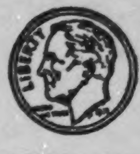
3. Which sign do we use for dollars?

¢ $ Σ

4. If you want to buy a ball that costs one dollar which would you use?



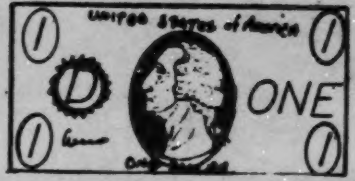




P.O. 2.10.06.03

NAME: ____________ CLASS: ____________ DATE: ____________

Fill in the blanks.



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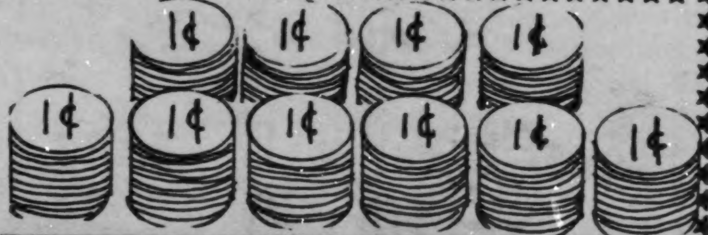
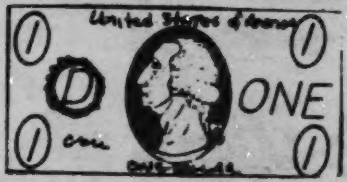


1 dollar = ___ ¢



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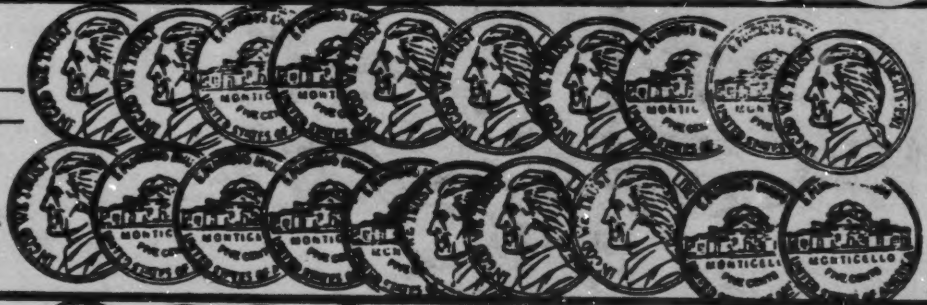
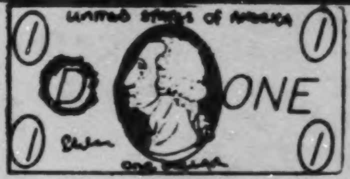


1 dollar = ___ nickles = ___ ¢



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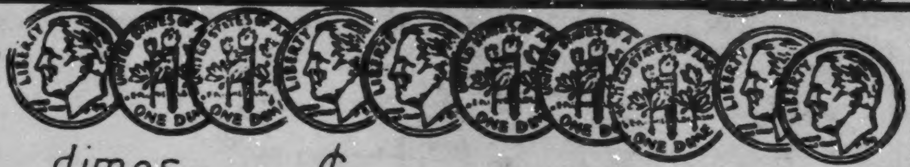
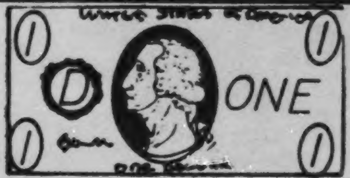


1 dollar = ___ dimes = ___ ¢



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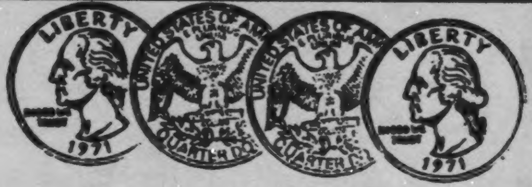
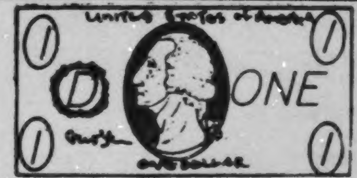


1 dollar = ___ quarters = ____ ¢



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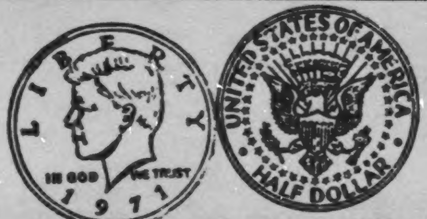


1 dollar = ___ half dollars = ____ ¢

P.O. 2.10.06.04

NAME:____________________ CLASS:________ DATE:_______

Match each word value to its number value.

One dollar and sixty-five cents	$1.15
One dollar and fifteen cents	$1.16
One dollar and thirty-two cents	$1.65
One dollar and sixteen cents	$1.72
One dollar and fifty-two cents	$1.32
One dollar and seventy-two cents	$1.52

Unit 26

2.02.04 ADDITION OF A 2-DIGIT NUMBER AND A 1-DIGIT NUMBER WITH REGROUPING (ONES TO TENS)

(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.02.04.01B add a 2-digit number and a 1-digit number with regrouping (exchange) using expanded notation;

e.g.,

$$\begin{array}{rcl} 13 & = & 10 + 3 \\ +\ 8 & = & 8 \\ \hline & & 10 + 11 = 10 + 10 + 1 = 21 \end{array}$$

2.02.04.02B add a 2-digit number and a 1-digit number with regrouping (exchange) ones to tens and check;

e.g.,

$$\begin{array}{r} 1 \\ 23 \\ +\ 7 \\ \hline 30 \end{array} \qquad \begin{array}{r} \underline{\text{check}} \\ 7 \\ +23 \\ \hline 30 \end{array}$$

2.02.04.03B solve story problems related to skills learned in this module.

e.g.,

John had 14 comic books. Mary had 9 comic books. How many did they have in all?

$$\begin{array}{rl} 14 & \\ +\ 9 & \\ \hline 23 & \text{comic books} \end{array}$$

2.02.04

VOCABULARY

TERMS

total
check
regrouping
exchange
expanded notation

GETTING STARTED

Prepare five sets of cards with a number from 0 through 9 on each. Play "Nine or Less." Ask two students to come to the front of the room. Show the first student a card. Say, "The student that is closest to 9 wins." Ask the player if he/she wants another card. If the player does, he/she adds the number on both cards as his/her score. Players continue until they are close to 9. If a player goes over 9, he/she loses. Continue this game using 3, 4, or 5 students at a time.

Prepare a set of 0 through 9 number cards. Distribute two cards to each student. Ask each student to stand and give the sum of his/her cards. Collect the cards, shuffle them, redistribute the cards and repeat this procedure.

2.02.04

2.02.04.01 **add a 2-digit number and a 1-digit number with regrouping (exchange) using expanded notation**

STRATEGY 1: Prepare and distribute squared material to each student. Say, "Use your squared material to show 43. Place eight more unit pieces on your desk. How many unit pieces do you have now? (11) Do you have enough unit pieces to make a ten strip? How many unit pieces are in a ten strip? Count 10 unit pieces, exchange them for 1 ten strip and put this strip next to the other ten strips. How many ten strips are there now? (5) How many unit pieces are there now? (1) How much do you have altogether?" (51)

Repeat this procedure using other squared material.

STRATEGY 2: Draw two savings banks on the chalkboard, one labeled dimes and the other labeled pennies. Say, "Mary has 35¢. How many dimes does she have? (Write 3 in the dime bank.) How many pennies does Mary have? (Write 5 in the penny bank.) Mary's mother gave her 6¢ more. Mary put the 6 pennies into her penny bank. Write +6 in the penny bank. How much does Mary have altogether? Mary has 30¢ in the dime bank and 11¢ in the penny bank. Does Mary have enough pennies to exchange for 1 dime? Mary has 30 + 10 + 1. How many dimes does Mary have now? (4 dimes or 40¢) How many pennies does she have? How much is 40¢ + 1¢? Let's write the story of Mary's money in a number sentence."

e.g.,

Mary had 35¢. Her mother gave her 6¢ more.

$$\begin{array}{ll} 35 + 6 = & \quad 30 + 5 \\ 30 + 5 + 6 & \quad \underline{+ \quad\; 6} \\ & \quad 30 + 11 = (30 + 10) + 1 = 41 \end{array}$$

2.02.04.02 **add a 2-digit number and a 1-digit number with regrouping (exchange) ones to tens and check**

STRATEGY 1: Prepare and distribute chips in two colors and a place value chart to each student. Say, "Let's begin with the number 23. It means 2 tens and 3 ones. Place 2 tens chips on the tens side and the 3 ones chips on the ones side. Add 8 ones. How many ones are on the ones side? (11) Are there more than 10? What do we do when we have more than 10? (Exchange 10 ones for 1 ten.) How many tens do we have now? How many ones do we have? How many do we have altogether? (31) What does the 3 mean? (3 tens or 30) What does the 1 mean?" (1 one) Write this as an algorithm.

e.g.,

$$\begin{array}{r} 23 \\ +8 \\ \hline 31 \end{array}$$

Say, "We can check our example by reversing the numbers when adding."

e.g.,

$$\begin{array}{r} 8 \\ +23 \\ \hline 31 \end{array}$$

Repeat this procedure using other examples.

STRATEGY 2: Prepare and distribute two sets of chips in two colors (18 blue "one" chips, 9 red "ten" chips) and a tens and ones place value chart to each student.

Say, "Janet has 17 jacks and Marcy has 5 jacks. How many jacks do they have altogether? How can we show 17 on our chart? (Place a red chip in the tens column and seven blue chips in the ones column.) How can we show the 5 on our chart? (Place five blue chips in the ones column.) How many chips are

STRATEGY 2: cont'd

now in the ones column? (12) Since we cannot have more than nine in the ones column, we must trade ten blue chips for one red chip. Place this red chip in the tens column. How many chips are now in the tens column? (2) How many chips are in the ones column? (2) Seventeen plus five equals twenty-two." Write a number sentence for the above problem on the chalkboard.

e.g.,

$$\begin{array}{r} 17 \\ \underline{+5} \\ 22 \end{array}$$

Say, "We can check our example by reversing the numbers when adding." Write the check.

e.g.,

$$\begin{array}{r} 5 \\ \underline{+17} \\ 22 \end{array}$$

Repeat this procedure using other numbers.

2.02.04.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Display two hat bands, one labeled Tens and the other Ones, and a box containing straws bundled in tens and ones. Give two students a hat band to wear. Say, "John has 23 rabbits and Max has 9 rabbits. How many rabbits do they have in all?"

Ask a student to be John. Say, "Select the correct number of straws to equal 23 rabbits. Hand the 2 bundles of ten to the Tens person and the 3 ones to the Ones person. Ask a student representing Max to select 9 rabbits. Say, "Give your sticks to the Ones person." Say to the Ones person, "What do you have in your hand? (12 ones) What do you do when you have ten ones?" (Put a rubber band around the

STRATEGY 1: cont'd

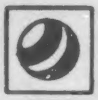
ten ones and give the bundle to the Tens person. Keep the 2 ones.) Ask the student representing John, "What does the Tens person have now? (3 bundles of ten or 30) What does the Ones person have? (2 ones) How much do they have in all?" (32)

Repeat this procedure with other problems.

STRATEGY 2:

Prepare and display pictures of toys with a price on each picture.

e.g.,



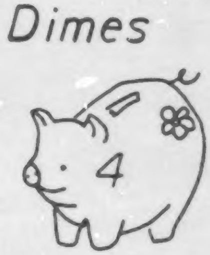
Ask a student to select two items, one that has a 2-digit cost and one that has a 1-digit cost. Say, "How much money do you need to buy these items?" Ask the students to find the sum as one student writes and solves the example on the chalkboard.

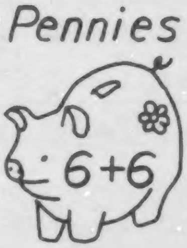
Repeat this procedure using other toy choices.

P.O. 2.02.04.01

NAME: ______________________ CLASS: ________ DATE: ________

Do the addition with regrouping using expanded notation.

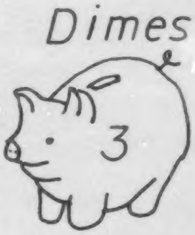


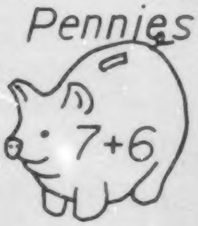


46 = 40 + 6

+6   +6

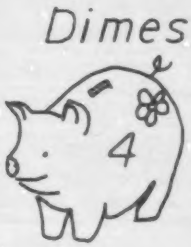
40 + 12 =

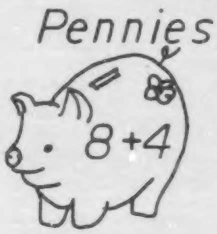




37 =

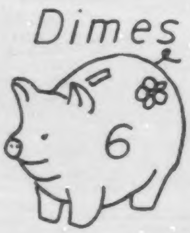
+6

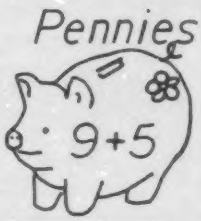




48 =

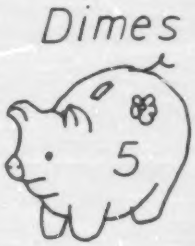
+4

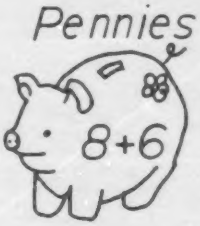




69 =

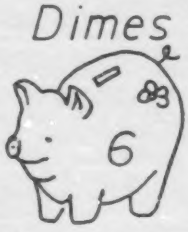
+5

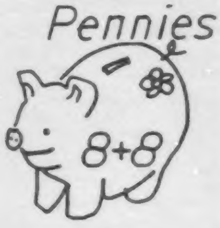




58 =

+6





68 =

+8

P.O. 2.02.04.02

NAME:____________________________________ CLASS:_________ DATE:_______

Choose one sandwich and one drink. Write the names of each and the prices. What is the total of the bill? Check your answer.

SAM'S PRICE LIST

HAMBURGER -	55¢	CHEESE -	28¢
FRANKFURTER -	24¢	EGG -	17¢
HAM -	48¢	TUNA -	46¢

SODA - 9¢
MILK - 8¢
JUICE - 7¢
LEMONADE - 6¢

CHOOSE 1 SANDWICH AND 1 DRINK

HAMBURGER 55¢ SODA + 9 TOTAL		

P.O. 2.02.04.03

NAME: ______________________ CLASS: ________ DATE: ________

Read the problems. Write the example on the side.
Do the addition and then check your work.

PIES
TARTS
CAKE

Little Bo Peep counted 12 sheep. Then she counted 9 more sheep. How many sheep did she count in all?	12 +9	The King was in the counting house. He counted 49 gold coins. He had ________ coins in all?	
Jack Horner sat in a corner and pulled out 46 plums. Then he pulled out 7 more plums. In all, he pulled out ______ plums?		She sold 46 seashells and he sold 6 seashells at the seashore. How many shells did they sell in all?	
The old woman in the show had 27 boys and 7 girls. She had ________ youngsters in all?		Simple Simon met a Pieman with 35 muffins and 8 pies. How many cakes did he have altogether?	

2.03.02 SUBTRACT A 1-DIGIT NUMBER FROM A 2-DIGIT NUMBER WITH REGROUPING

(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.03.02.01B subtract a 1-digit number from a 2-digit number with regrouping (exchange) tens for ones and check;

e.g.,

$$\begin{array}{r} \overset{2}{\cancel{3}}7 \\ -\ 9 \\ \hline 28 \end{array} \qquad\qquad \begin{array}{r} \underline{\text{check}} \\ 9 \\ +28 \\ \hline 37 \end{array}$$

2.03.02.02B subtract money through 99¢ with regrouping (exchange) tens for ones and check;

e.g.,

$$\begin{array}{r} \overset{3}{\cancel{4}}3¢ \\ -\ 9¢ \\ \hline 34¢ \end{array} \qquad\qquad \begin{array}{r} \underline{\text{check}} \\ 9¢ \\ +34¢ \\ \hline 43¢ \end{array}$$

2.03.02.03B solve story problems related to skills learned in this module.

e.g.,

Lorraine baked 62 cupcakes. Arthur ate 6 cupcakes. How many cupcakes did Lorraine have left to eat?

$$\begin{array}{r} \overset{5}{\cancel{6}}2 \\ -\ 6 \\ \hline 56 \end{array} \text{ cupcakes} \qquad\qquad \begin{array}{r} \underline{\text{check}} \\ 6 \\ +56 \\ \hline 62 \end{array}$$

2.03.02

VOCABULARY

TERMS

regrouping
check
solve

GETTING STARTED

Prepare two containers and bundles of sticks or straws representing tens and ones. Label one container TENS and the other ONES.

Place four bundles of ten and seven ones in the appropriate containers. Write 47 on the chalkboard. Say, "Let's remove some (but not all) of the tens bundles and some of the ones from the cans. How many sticks do we have now?" Write this number sentence on the chalkboard.

$$\begin{array}{r} 47 \\ \underline{-23} \end{array}$$

Say, "How many sticks are left in the cans?" Place this number in the answer of the subtraction example on the chalkboard.

$$\begin{array}{r} 47 \\ -23 \\ \hline 24 \end{array}$$

Repeat this procedure using other situations.

Ask a student to write a 2-digit numeral on the chalkboard. Ask another student to write a 1-digit numeral, that is smaller than the ones and tens digits of the 2-digit numeral and place it beneath the 2-digit numeral. A third student does the subtraction and a fourth checks the example.

Repeat this procedure using other numbers.

2.03.02

2.03.02.01 **subtract a 1-digit number from a 2-digit number with regrouping (exchange) tens for ones and check**

STRATEGY 1: Prepare two containers labeled TENS and ONES and bundles of straws (sticks) in groups of ten and as units for demonstration. Distribute the straws.

Place four bundles of ten and three single sticks in the proper cans. Say, "How many straws are there? (Write 43 on the chalkboard.) Place the same amount on your desks. Remove seven sticks. (Write $\begin{array}{r} 43 \\ -7 \\ \hline \end{array}$ on the chalkboard.) Can we remove seven straws from the ONES can? Why? Where can we get more sticks? Let's untie a bundle from the TENS can and place them in the ONES can. How many bundles are left in the TENS can? (3) How many ones are in the ONES can? (13) Can we remove seven sticks from the ONES can? Remove seven sticks from your desk. How many sticks remain? (Write $\begin{array}{r} 43 \\ -7 \\ \hline 36 \end{array}$.) Let's find out if our answer is correct. We must add the answer 36 plus the 7 we took away. (Write $\begin{array}{r} 36 \\ +7 \\ \hline \end{array}$ on the chalkboard.) What is the total? If the sum is the same as the amount we started with then we are correct."

Repeat this procedure using other numbers.

STRATEGY 2: Prepare and distribute ten strips and unit squared materials to each student. Write 34 on the chalkboard. Say, "Use your squared materials to show 34 at your desk. Remove 6 units." (Write $\begin{array}{r} 34 \\ -6 \\ \hline \end{array}$ on the chalkboard.) Elicit that six units cannot be removed. Say, "What must we do? We must exchange 1 ten strip for 10 units. Do this at your desk. How many tens strips are left? How many

STRATEGY 2: cont'd

ones do we now have? Can we remove 6 units? How many units are left? (Record the subtraction on the chalkboard.) We are going to see if we have the correct answer. We must add the answer (28) plus the part we took away (6). Who can find the total? Is the total the same as the number with which we started? If it is, we are correct."

Repeat this procedure using other numbers.

2.03.02.02 **subtract money through 99¢ with regrouping (exchange) tens for ones and check**

STRATEGY 1: Prepare and distribute dimes and pennies cut from construction paper to each student. Write the following example on the chalkboard.

e.g.,

$$\begin{array}{r} 2 \text{ dimes} + 4 \text{ pennies} \\ \underline{- \qquad\quad 8 \text{ pennies}} \end{array} \qquad \begin{array}{r} 24\text{¢} \\ \underline{-\ 8\text{¢}} \end{array}$$

Say, "Show 2 dimes and 4 pennies on your desk. Take 8 pennies away from the amount you have. How can we do this? We must exchange 1 dime for 10 pennies in order to take away 8 pennies. How many dimes do you have left? (2) How many pennies do you now have?" (14)

Write the following example on the chalkboard.

e.g.,

$$\begin{array}{r} \overset{1}{\cancel{2}} \text{ dimes} + 14 \text{ pennies} \\ \underline{- \qquad\qquad 8 \text{ pennies}} \end{array} \qquad \begin{array}{r} \overset{1}{\cancel{2}}4\text{¢} \\ \underline{-\ 8\text{¢}} \end{array}$$

Say, "How many pennies are left? (16) Now we add our answer (16) to the number of pennies we took

STRATEGY 1: cont'd away." (8) Write $\begin{array}{r}16\\+8\\\hline\end{array}$ on the chalkboard. Say, "Who can find the sum? How many dimes are left?"

Repeat this procedure using other examples.

STRATEGY 2: Draw the following chart on the chalkboard. e.g.,

Item	Price
ruler	9¢
notebook	6¢
sharpener	8¢
eraser	5¢
pencil	7¢

Say, "Your mother gave you 56¢ to buy something that you need for school." Ask a student to choose a card. Say, "What did you buy? (a pencil) How much money did you have? (Write 56¢ on the chalkboard.) How much does the pencil cost? (7¢) How much change will you get back? What must you do to take 7¢ away from 56¢? (Regroup 1 dime into 10 pennies.) How much change did you get back? (49¢) Let's see if that is correct. How much did you get back? How much did you spend?" Write $\begin{array}{r}47¢\\+7¢\\\hline\end{array}$ on the chalkboard. Say, "Who can find the sum? Is that amount the same as the amount that your mother gave you? If it is, you are correct." Repeat this procedure with the other items.

2.03.02.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Say, "John has a new pet. He wants to train his dog. He is going to read a book to learn what to do. The book has 45 pages. He has read 8 pages so

STRATEGY 1: cont'd

far. How many pages does he have left to read? How are we going to find out how many pages John still has to read?" Write $\begin{array}{r}45\\ \underline{-8}\end{array}$ on the chalkboard. Ask a student to do the subtraction. Make certain that the student exchanges 1 ten for 10 ones. Say, "If you exchange 1 ten for 10 ones, how many tens do you have left? How many ones do you now have?" Show the example on the chalkboard.

e.g.,

$$\begin{array}{r} 3\ 15 \\ \cancel{4}\ \cancel{5} \\ \underline{-\ 8} \end{array}$$

Say, "How many pages does John have left to read? Check your answer."

Repeat this procedure using other examples.

STRATEGY 2: Write this story problem on the chalkboard.

e.g.,

> Maria had 53¢. She gave her sister 8¢. How much money does Maria have left?

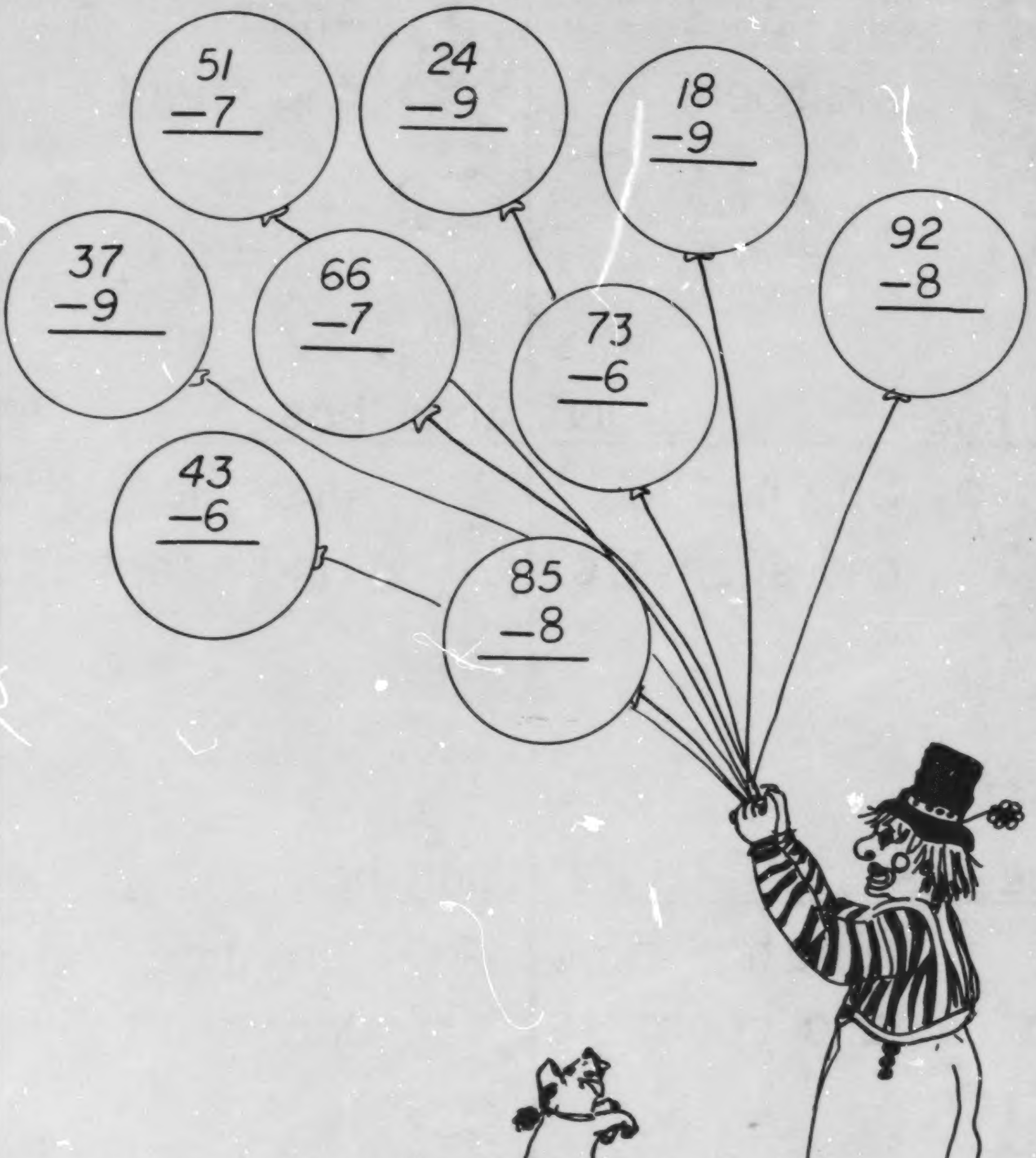
Say, "Who will read the problem for us? What do we want to find out? How much did Maria have? How much did she give to her sister?" Write $\begin{array}{r}53\\ \underline{-8}\end{array}$ on the chalkboard. Say, "How much money does Maria have left?" Ask a student to check the answer by adding $\begin{array}{r}45\\ \underline{+8}\end{array}$.

Repeat this procedure using other story problems.

P.O. 2.03.02.01

NAME: ______________________________ CLASS: __________ DATE: ________

Release each balloon, after you find the answer, by drawing a line through the string. Check your answers on the bottom of the page.


51 −7
24 −9
18 −9
37 −9
66 −7
92 −8
73 −6
43 −6
85 −8

P.O. 2.03.02.02

NAME:______________________________CLASS:__________DATE:________

Find out how much money each student has left after each spent some money.

Bill had 24¢ and spent 7¢.

$$\begin{array}{r} 24¢ \\ -\ 7¢ \\ \hline \end{array}$$

Bill has __________ left.

Anna had 35¢ and spent 6¢.

$$\begin{array}{r} 35¢ \\ -\ 6¢ \\ \hline \end{array}$$

Anna has __________ left.

Sue had 18¢ and spent 9¢.

Sue has __________ left.

Juan had 81¢ and spent 2¢

Juan has __________ left.

Tina had 52¢ and spent 4¢.

Tina has __________ left.

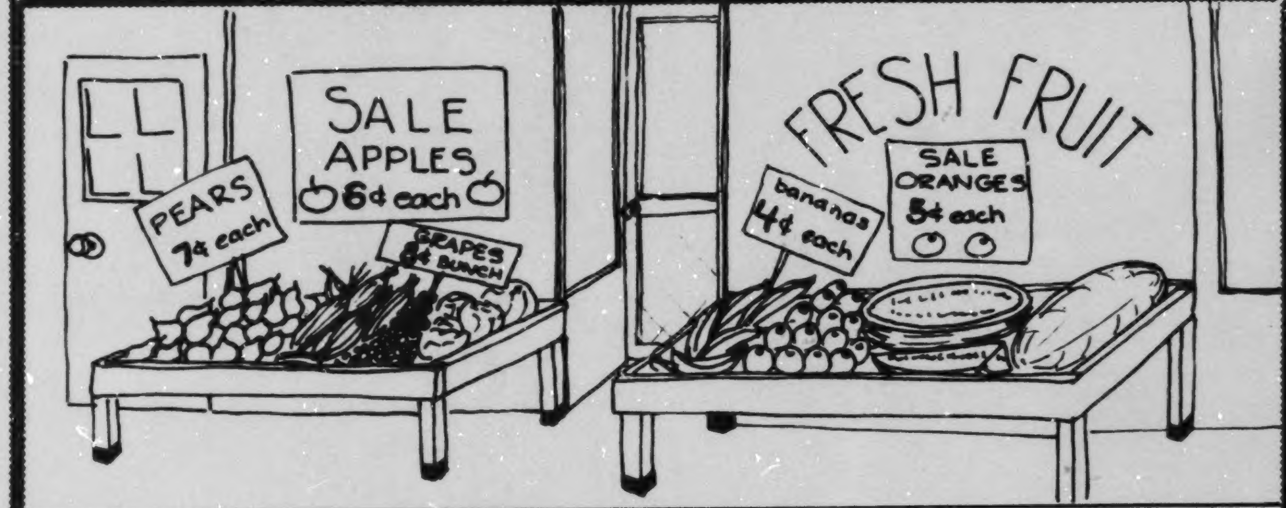
Tony had 73¢ and spent 5¢.

Tony has __________ left.

P.O. 2.03.02.03

NAME: ______________________ CLASS: __________ DATE: ________

Subtract. Show the regrouping.
Be sure to check your answer.


SALE
APPLES
6¢ each
PEARS
7¢ each
GRAPES
9¢ BUNCH
FRESH FRUIT
bananas
4¢ each
SALE
ORANGES
5¢ each

Had Bought 🍎 Change	$\overset{1\ 12}{22}$¢ - 6¢ 16¢	**Check** 16¢ + 6¢ 22¢	
Had Bought 🍇 Change	37¢ ___¢ ___¢	**Check**	
Had Bought 🍌 Change	51¢ ___¢ ___¢	**Check**	
Had Bought 🍊 Change	63¢ ___¢ ___¢	**Check**	
Had Bought 🍐 Change	73¢ ___¢ ___¢	**Check**	
Had Bought 🍇 Change	47¢ ___¢ ___¢	**Check**	
Had Bought 🍎 Change	65¢ ___¢ ___¢	**Check**	
Had Bought 🍌 Change	93¢ ___¢ ___¢	**Check**	

Unit 28

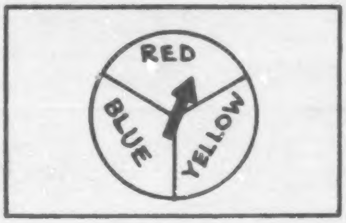
2.12.01 PROBABILITY - PREDICT AND TALLY OUTCOMES

(1 lesson)

PERFORMANCE OBJECTIVES

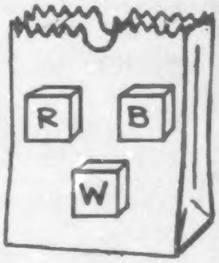
The student will be able to...

2.12.01.01B predict the outcome of three equally likely events;
e.g.,



2.12.01.02B tally the outcome in a three possibility event as one choice out of three.
e.g.,

Red	White	Blue
卌	///	/



Make a mark in the appropriate column. Count or tally the marks.

2.12.01

VOCABULARY

TERMS

predict
outcome
tally

GETTING STARTED

Give each student a penny. Say, "Look at the side with the picture of a head. We call this side heads. Look at the other side of the coin. We call this side tails. If you flip this coin, what is the chance that it will land on the heads side? ...the tails side? There is a 50-50 chance or one chance out of two possibilities for it to be either a head or a tail. Flip your coins. On which side did your coin land?" Count the number which landed on heads and the number which landed on tails.

Prepare a red block, a blue block, and a shoe box. Show both blocks to the students and place them in the shoe box. Say, "If I asked you to close your eyes and pick one of these blocks, which one do you think you would pick? (Accept any color as an answer.) How many blocks are there? What are the colors? What are the chances that you would choose a red block? (1 out of 2) ...a blue block?" (1 out of 2)
Draw the following chart on the chalkboard.

Blocks	Tally	Total
red		
blue		

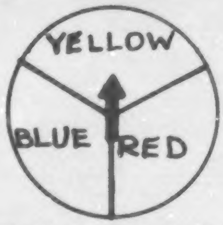
Ask various students to pick a block and put a tally mark in the correct column. Add the tallies to get a total.

2.12.01

2.12.01.01 **predict the outcome of three equally likely events**

STRATEGY 1: Prepare and display a spinner with three equal divisions shaded in yellow, red, or blue.

e.g.,



Say, "How many parts or colors are on the spinner? What are the colors on the spinner? When you spin the pointer you will land on either yellow, red or blue. What are the chances of the pointer landing on yellow? (1 out of 3) What are the chances of landing on blue? (1 out of 3) What are the chances of landing on red?" (1 out of 3)

STRATEGY 2: Divide the class into small groups. Prepare and distribute to each group a spinner with the colors red, yellow and blue. Say, "If you spin the pointer five times, how many times do you think you will spin the color yellow? (Accept any answer.) How many colors are on the spinner? What are the colors?" Ask one student from each group to spin the pointer and then ask the student next to him/her to spin the pointer. Say, "Did both of you spin the same color?" Give everyone a chance to spin the pointer and see how many times the color red appears. After a few minutes, select a student from each group to count the number of times the color red occurred. Say, "In a three color spinner, what are the chances of any one color coming up?" (1 out of 3.)

2.12.01

2.12.01.02 **tally the outcome in a three possibility event as one choice out of three**

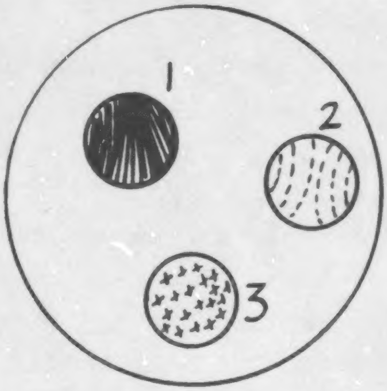
STRATEGY 1: Ask three students to stand in a row. Write their names on the chalkboard. Say, "We are going to guess which of these students can jump the farthest. Who do you think will jump farthest?" Record a tally mark under each name as each student makes a guess. Count or tally the marks in each column. Explain to the class that the fifth tally mark crosses the first four, and the sixth mark starts a new group of five. This makes counting the total number easier. Ask the students to jump, one at a time, and mark the spot where they land. Say, "Did the winner match the class's guess? If we picked three different students and guessed again, would we be right this time? In the area of chance, you can only give a good guess. You never know for sure what the outcome will be until it actually happens."

STRATEGY 2: Distribute a bag with three different colored cubes (red, yellow, blue) to groups or pairs of students. Say, "We are going to play a game. Write each color on a line in your notebook. You are to pick a cube from the bag, look at the color and put a mark next to the color word in your notebook. Put the cube back and ask your partner to do the same. Be sure to mark the color you pick on your chart. Do this ten times and then count the tally marks for each color." Compare the chart for each group. Show the students how to tally by 5's, e.g., 𝍸. The fifth tally mark crosses the first four and then the sixth mark starts a new group of five. Say, "This makes counting the total number of marks easier."

P.O. 2.12.01.01

NAME:____CLASS:_________DATE:_______

Answer the questions.



This plate has 3 balls on it.

Each ball has a number, 1 2 3

Close your eyes and choose a ball.

1) What are your chances of choosing number 1 ? ___ out of ____.

2) What are your chances of choosing number 2 ? ___ out of ____.

3) What are your chances of choosing number 3 ? ___ out of ____.

P.O. 2.12.01.02

NAME: ______________________ CLASS: ________ DATE: ________

Make a three color spinner.
Fill in the blanks.

You will need a three-color spinner.

How many colors are on the spinner? __________.

What are the colors? ______, ________, ________.

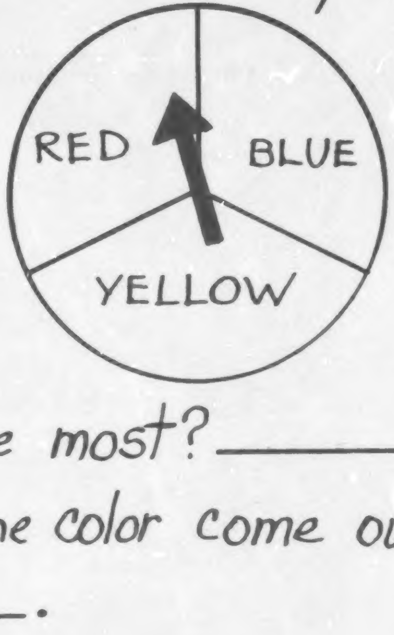
What are your chances of spinning red? _____ out of ____.

What are your chances of spinning blue? _____ out of ____.

What are your chances of spinning yellow? _____ out of ____.

Spin your spinner.
Where does the pointer land? Make a tally mark on the chart for each spin.
Do this 10 times.

RED	YELLOW	BLUE



Which color came out the most? __________

Do it again. Does the same color come out?

________________________.

2.12.02 DATA - COLLECT, TABULATE, ARRANGE AND COMPARE IN TABLES

(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.12.02.01B collect data;
e.g.,

Count colors of cars passing school on a given day.

2.12.02.02B tabulate and arrange data in a table;
e.g.,

	Red	Blue
Cars	𝍸𝍸 ||	𝍸𝍸

2.12.02.03B compare data in a table.
e.g.,

	Red	Blue	Green
Cars	𝍸	||||	|||

How many cars are red?

The number of red cars is greater than the number of blue cars.

The number of green cars is less than the number of red cars.

2.12.02

VOCABULARY

TERMS

data
collect
arrange

GETTING STARTED

Say, "I am going to ask students wearing certain colors to do something. Everyone wearing red, stand up and turn around. Everyone wearing blue, stand up and hop. Everyone wearing brown, stand up and touch your knees." Continue this activity until everyone is standing and doing something. Stop the group and say, "We are all doing different things because we are separated into groups by the colors we are wearing."

Distribute small plastic bags containing various coins to each student. Say, "Make a list of the coins in your bag and how many there are of each."

e.g.,

Coins
4 pennies
2 nickels
3 dimes

Repeat this procedure using other material to form tables.

76

2.12.02

2.12.02.01 collect data

STRATEGY 1: Write a list of ice cream flavors on the chalkboard. Say, "What is your favorite flavor?" Write the student's name under his/her favorite flavor. Say, "We have just collected information about our favorite ice cream flavors. Another word for information is data. We can say we collected data about our favorite flavors."

STRATEGY 2: Fill five boxes with colored rods, blocks, cubes or crayons. Divide the class into five groups and give each group one of the boxes. Say, "Separate the items in the box by color." Write the following on the chalkboard: Colors of Rods in Our Classroom. Elicit and write the names of the rod colors the students have in a list. Ask the students to tell how many rods each group has. Say, "We have gathered data about the colors of the rods in our classroom."

2.12.02.02 tabulate and arrange data on a table

STRATEGY 1: Write the table below on the chalkboard. Survey the students for their favorite flavors and make tally marks for each student.

e.g.,

Chocolate	Vanilla	Strawberry

After the tallies have been written, ask a student to count the number of students who like each flavor and write the number under the tally marks. Explain to the students that it is easier to count the total number of students who like a certain flavor of ice cream since a table was used. Data is easier to collect when we use a table.

Repeat this procedure using favorite foods.

2.12.02

STRATEGY 2: Say, "I am going to ask you to help with the attendance. Every day I must record the number of boys and girls who are present. The job can be made easier by making a table." Draw the following table on the chalkboard.

e.g.,

Attendance	Boys	Girls

Ask a student to count and make one tally mark for each boy on the chart. Ask another student to count the girls and make one tally mark for each girl on the chart. Be sure that the students tally the marks by fives. Ask a third student to total the marks to show the total attendance.

2.12.02.03 **compare data on a table**

STRATEGY 1: Survey the students as to their favorite fruit. Make a table of the items and tally the choices. Ask questions about the data, e.g., How many people like apples? ...peaches? ...strawberries? Which fruit do more students like? Which fruit do students like the least? How many more people like peaches than apples? Continue this kind of questioning, emphasizing comparison of data.

STRATEGY 2: Draw this chart on the chalkboard.

e.g.,

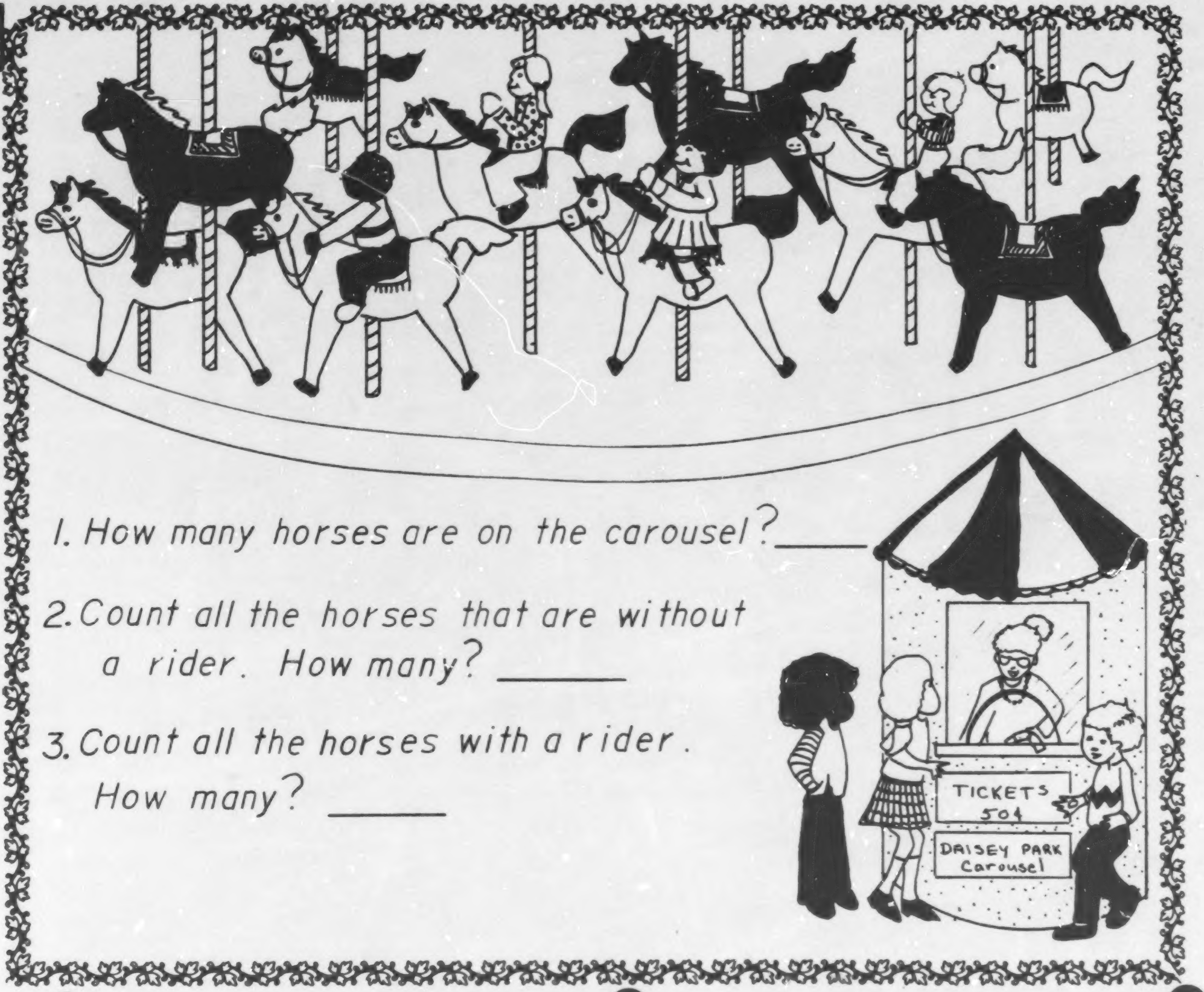
Blocks	Red	Blue	Green

Distribute colored blocks to pairs of students. Say, "Count the number of red, blue, and green blocks that are on your desk. Record the information on a chart like the one on the chalkboard in your notebook. How many red blocks are there? ...blue blocks? ...green blocks? Of which color are there more? ...less? How many more red blocks are there than blue?" Continue this type of questioning, emphasizing comparison of data.

P.O. 2.12.02.01

NAME: ____________ CLASS: ____________ DATE: ____________

Look at the picture. Answer the questions.


TICKETS
50¢
DAISEY PARK
Carousel

1. How many horses are on the carousel? _____

2. Count all the horses that are without a rider. How many? ______

3. Count all the horses with a rider. How many? ______

P.O. 2.12.02.02

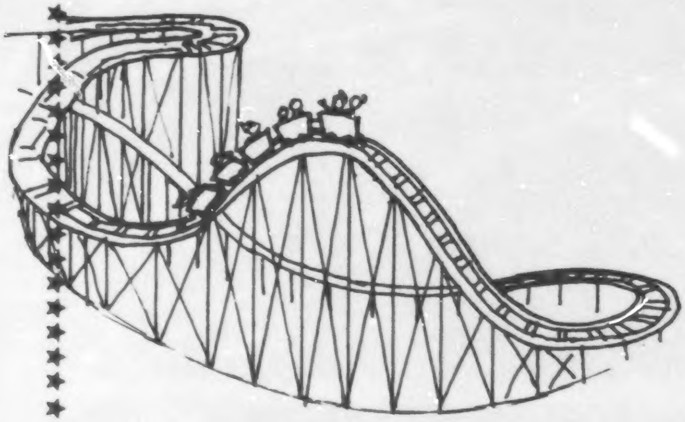
NAME:____________________CLASS:__________DATE:________

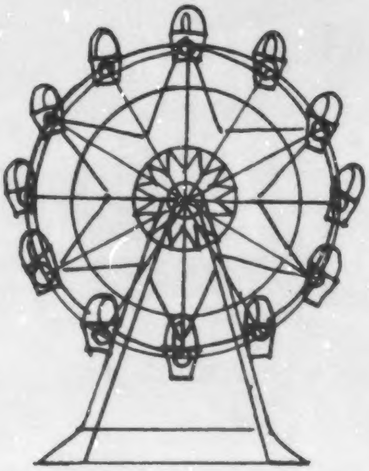
Make a chart to go with the information.

Daisy Park has many exciting rides. Some of the rides are more popular than others. On Sunday there were 12 riders on the roller coaster, 8 riders on the log ride, 10 riders on the ferris wheel and 20 riders on the haunted mermaid ride.

Make a table to show how many riders there were Sunday.

RIDES	NUMBER OF RIDES

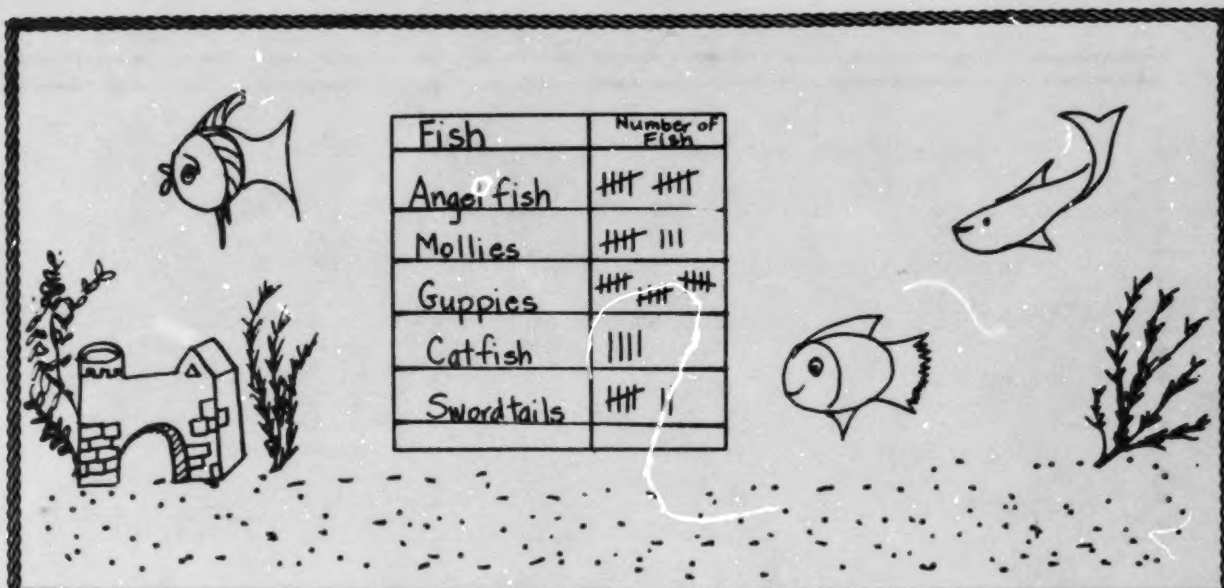




P.O. 2.12.02.03

NAME:________________________ CLASS:________ DATE:_______

Fill in the blanks.



Fish	Number of Fish
Angelfish	𝍸 𝍸
Mollies	𝍸 III
Guppies	𝍸 𝍸 𝍸
Catfish	IIII
Swordtails	𝍸 II

1. Count the number of fish. How many of each are there? Angelfish___ Mollies___Guppies_____ Catfish___ Swordtails____
2. Which kind of fish has the most?____________
3. Which kind of fish has the least?____________
4. How many more guppies are there than catfish?__________
5. How many more angelfish are there than swordtails?__________

2.13.03 USE DATA

(2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.13.03.01A answer questions based upon a set of data; e.g.,

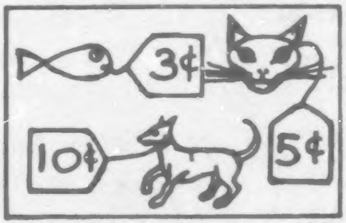
Favorite Flavors

	Boys	Girls
strawberry	11	9
vanilla	7	6

How many boys chose vanilla?

How many students voted?

2.13.03.02A create his/her own questions based upon a set of data; e.g.,



How much does the toy fish cost?

How much more does the dog cost than the fish?

2.13.03.03A make inferences based upon a set of data. e.g.,

DECEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

On what day of the week did November end?

2.13.03

VOCABULARY

TERMS

data
inferences

GETTING STARTED

Construct and display an experience chart with the first name of each student. Ask each student for his/her favorite names. Make a chart for favorite names in the class.

Make a chart of data surveyed about favorite TV shows.

Favorite Shows	
Jeffersons	卌 ////
Knight Rider	卌 //
Magnum, P.I.	卌
Muppets	卌 卌 //

Ask the students which show is most popular? ...least popular? Which two shows are liked the most?

2.13.03

2.13.03.01 answer questions based upon a set of data

STRATEGY 1: Divide the class into small groups. Prepare for each group, a shoe box with red, blue, and yellow crayons. Write this table on the chalkboard.

e.g.,

Color	Number of Crayons
red	
blue	
yellow	

Say, "Select one student in your group to count the number of red crayons in your shoebox. How many red crayons are there?" Write the number on the table. Repeat this procedure for counting the blue and yellow crayons and completing the table. Say, "Which group had the most red (blue, yellow) crayons? How many crayons were there in all?"

STRATEGY 2: Conduct a survey of favorite fruits. Draw this table on the chalkboard.

e.g.,

Fruit	Number of Students
banana	8
apple	6
orange	7

Say, "Which is the favorite fruit? ...least favorite fruit? How many students voted? How many more students like bananas than apples? ...than oranges?"

Ask the students to take their own survey on a different topic and make a table of their findings.

2.13.03

2.13.03.02 create his/her own questions based upon a set of data

STRATEGY 1: Prepare and display cutouts of toys with price labels. Say, "The Toy Show is going to open tomorrow. This is a display of all the toys that will be on sale. The manager of the toy shop has a problem. He needs to make a questionnaire for his boss so they can make an advertisement. Maybe you could help him make up some questions about the toys. This might be done by picking a toy that you would like to buy. Think of a question you can ask about it. Perhaps your favorite toy is the teddy bear. A question you might ask is, how much does a teddy bear cost? You can make a question comparing two prices, e.g., how much more is the teddy bear than the toy fish? Who can make a comparison question about the doll and the teddy bear? If someone wanted to buy a bat and a ball they could make an addition problem, e.g., how much would it cost to buy the bat and the ball?"

STRATEGY 2: Prepare and display pictures of boys and girls. Label each picture with a name. Say, "These students attend a different school than you but they are in the same grade and probably like the same things. Look at them. Can someone tell us about the number of boys and girls? Write a question about the number of boys and girls. Write another question about this picture." Read some of the questions aloud.

910

2.13.03

2.13.03.03 make inferences based upon a set of data

STRATEGY 1: Draw the following chart on the chalkboard.
e.g.,

Names	Height in inches
Tony	56 inches
Bill	61 inches
Bob	39 inches
Joe	46 inches

Say, "Tony, Bill, Bob and Joe decide to have a basketball throwing hoop contest. It seems that the tallest boy always wins the contest. Look at the data in the chart. The height of each boy is given in inches. Who is the tallest/shortest? Who you think will win the contest? Why?"

STRATEGY 2: Display a calendar of the current month. Distribute a copy to each student and say, "How many days does this month have? Looking at this calendar we know information that is not shown." Ask questions based on information not shown on the calendar, e.g., What month comes before this month? On what day of the week did the month begin? On what day of the week did last month end? On what day will next month begin?"

Repeat this procedure when introducing each monthly calendar.

P.O. 2.13.03.01

NAME: ______________________ CLASS: ________ DATE: ______

Read the chart to help you answer all the questions.

FAVORITE FLAVORS

Flavor	Boys	Girls
Chocolate	15	2
Vanilla	4	13
Strawberry	1	1

(1.) How many boys liked chocolate? ______

(2.) How many boys voted? ______

(3.) How many girls voted? ______

(4.) How many boys and girls voted? ______

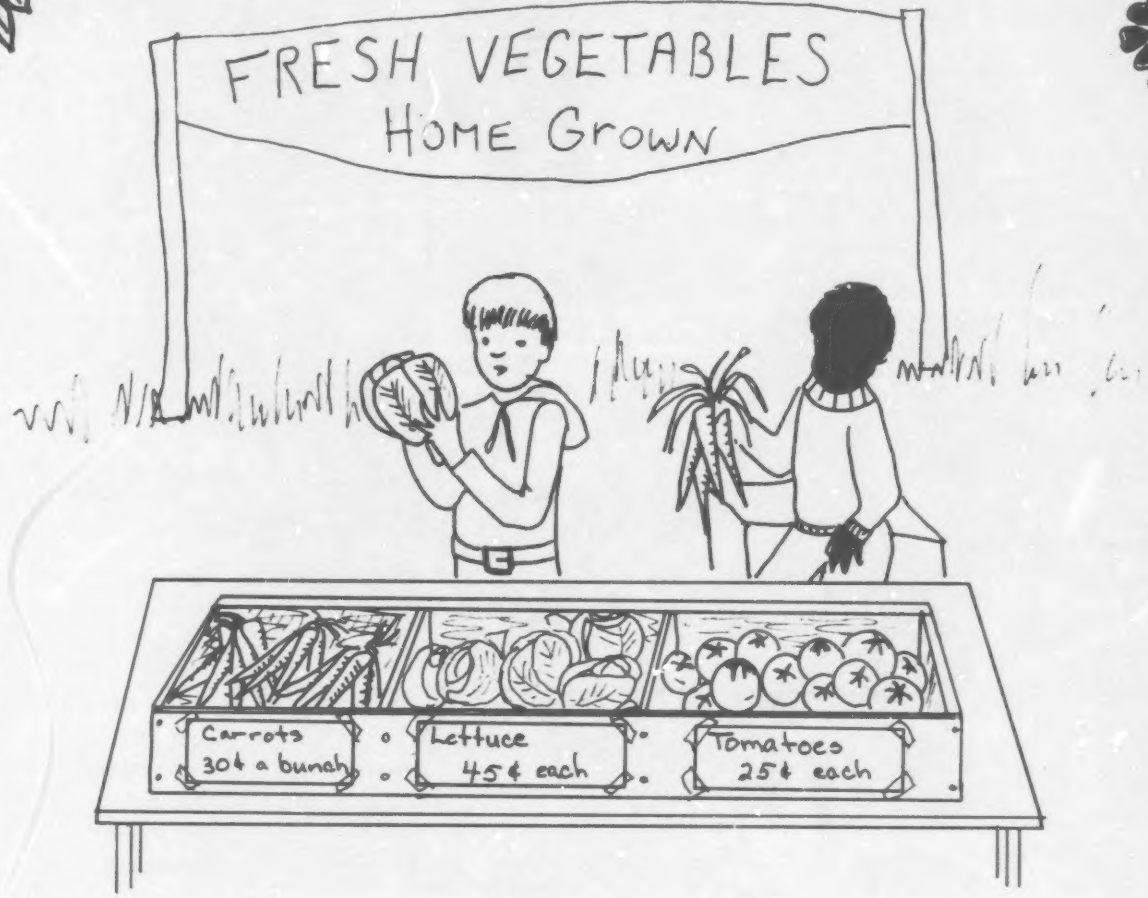
(5.) How many more girls liked vanilla than boys? ______

(6.) Which flavors got the same amount of votes? ________

P.O. 2.13.03.02

NAME: ______________________________ CLASS: __________ DATE: ________

Write three questions about the picture.


FRESH VEGETABLES
Home Grown
Carrots 30¢ a bunch
Lettuce 45¢ each
Tomatoes 25¢ each

1. ______________________________

____

2. ______________________________

____

3. ______________________________

____

P.O. 2.13.03.03

NAME: ______________________________ CLASS: ________ DATE: ________

Answer the questions.

November

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

On what day of the week did October end? ________

On what day of the week will December start? ______

Boy	Height in inches
Andy	58 inches
Tom	62 inches
George	50 inches
Pedro	65 inches

Who is the tallest? ____________

Who is the shortest? ____________

Line the boys in size places beginning with the shortest. ________ ________ ________ ______

Unit 31

2.01.08 IDENTIFY AND WRITE ROMAN NUMERALS I-XII

(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.01.08.01C identify the Roman symbols I, V, and X; e.g.,

I = 1

V = 5

X = 10

2.01.08.02C identify and write Roman numerals from I to XII (1 through 12). e.g.,

I = 1

II = 2

III = 3

IV = 4

V = 5

VI = 6

VII = 7

VIII = 8

IX = 9

X = 10

XI = 11

XII = 12

2.01.08

VOCABULARY

TERMS	**SYMBOLS**
Roman numerals one... twelve	I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII

GETTING STARTED

Use a classroom clock or prepare an oak tag clock. Point to each number on the clock from one through twelve and ask students to recite each number.

Place several addition and subtraction problems on the chalkboard with sums or differences which are not greater than 12.

e.g.,

$1 + 1 = \square \quad 3 + 4 = \square \quad 12 - 2 = \square$

Ask students to read and complete each number sentence to make a true statement.

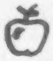
2.01.08

2.01.08.01 identify the Roman symbols I, V, and X

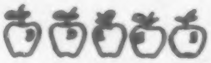
STRATEGY 1: Say, "When people first started hunting animals, how do you think they remembered the number of animals they caught? (They used sticks, stones, traced in the sand...) People have always had many systems of counting. We are going to look at a way to write numbers that is different from the one we usually use." Draw an apple on the chalkboard. Say, "Hold up as many fingers as there are apples." After each student holds up one finger, write 1 = I under the apple. Draw five apples on the chalkboard. Say, "Hold up as many fingers as there are apples." After each student holds up five fingers, write 5 = V under the five apples.

Repeat this procedure with ten apples. Write 10 = X under the apples.

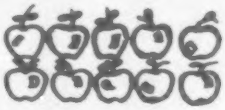
e.g.,



1 = I



5 = V



10 = X

STRATEGY 2: Prepare oak tag cards with the Roman numerals I, V, X, and the numbers 1, 5, and 10. Place these cards on the chalkboard ledge. Point to an object in the classroom, e.g., the clock. Say, "Who can find the number that is the same as the number of clocks in the classroom? The Roman numeral I also means one."

Repeat this procedure using five and then ten objects.

2.01.08

2.01.08.02 **identify and write Roman numerals from I to XII (1 through 12)**

STRATEGY 1: Prepare and display an oak tag clock with Roman numerals. Say, "What is different about this clock?" (The numbers/numerals.) Point to the Roman numeral I on the clock and say, "Who remembers what number this represents?" Repeat this procedure for V and X. Point to each Roman numeral on the clock and ask the students to say the numbers. When IV is reached, point out that instead of using IIII we use IV, because another name for four is five take away one. When IX is reached, explain that another name for nine is ten take away one.

Repeat this procedure until every numeral has been identified.

STRATEGY 2: Prepare oak tag cards with the Roman numerals I through XII. Hold up each card and say, "Who can name this numeral?" Place the card on the chalkboard ledge. Say, "I am going to place the cards in counting order with one card missing. e.g.,

$\boxed{\text{V}}$ $\boxed{\phantom{\text{V}}}$ $\boxed{\text{VII}}$ $\boxed{\text{VIII}}$

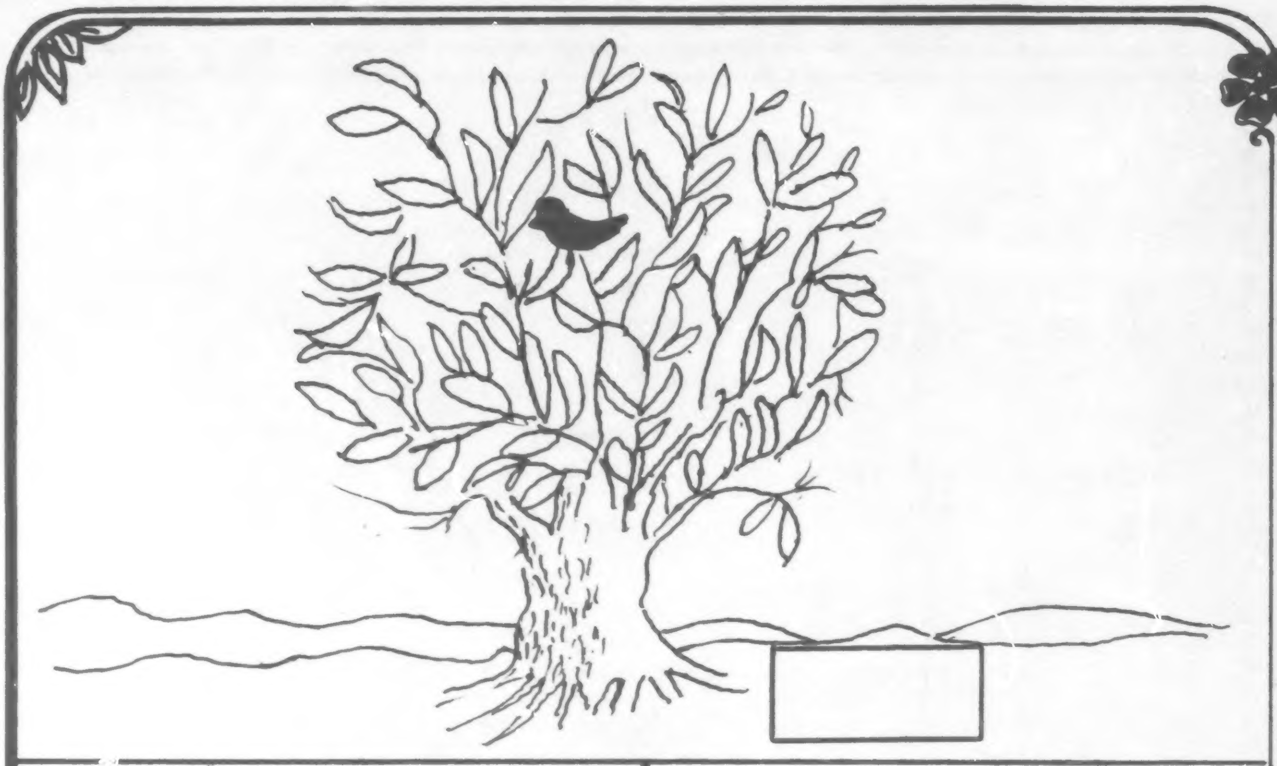
Which Roman numeral is missing?" (VI) Ask a student to find the card with the Roman numeral VI and place it on the chalkboard ledge in the proper place.

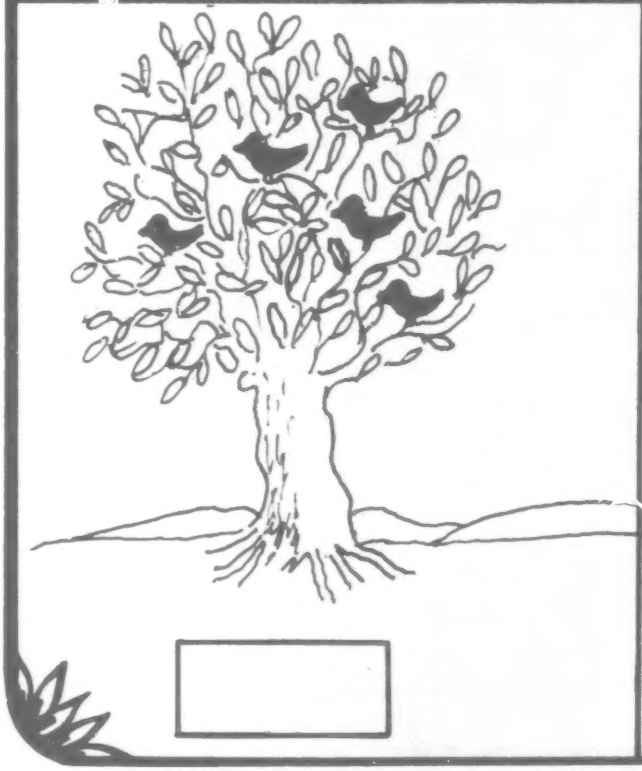
Repeat this procedure for the other examples.

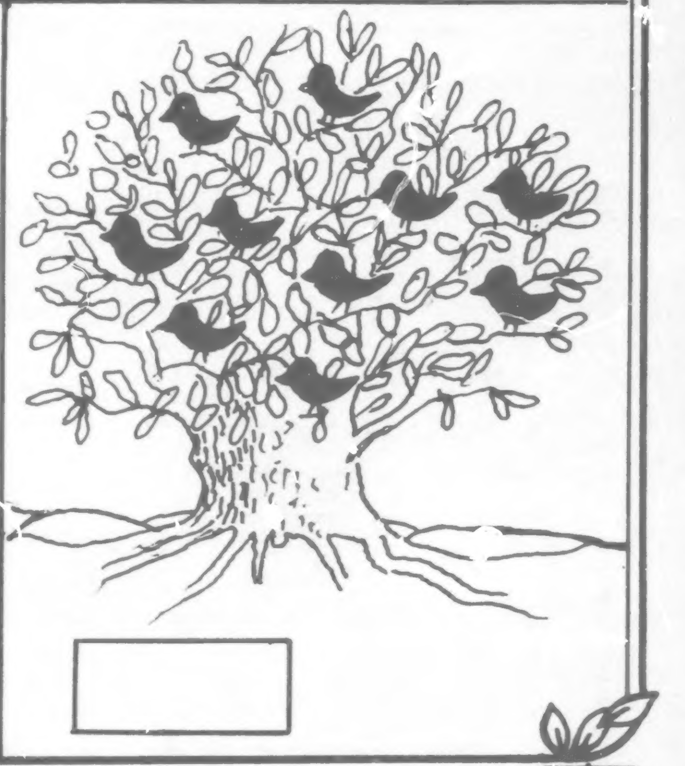
P.O. 2.01.08.01

NAME: ______________________ CLASS: ________ DATE: ________

How many birds are hiding in each tree? Count the number of birds in each tree. Write the Roman numeral in the spaces provided under each tree.





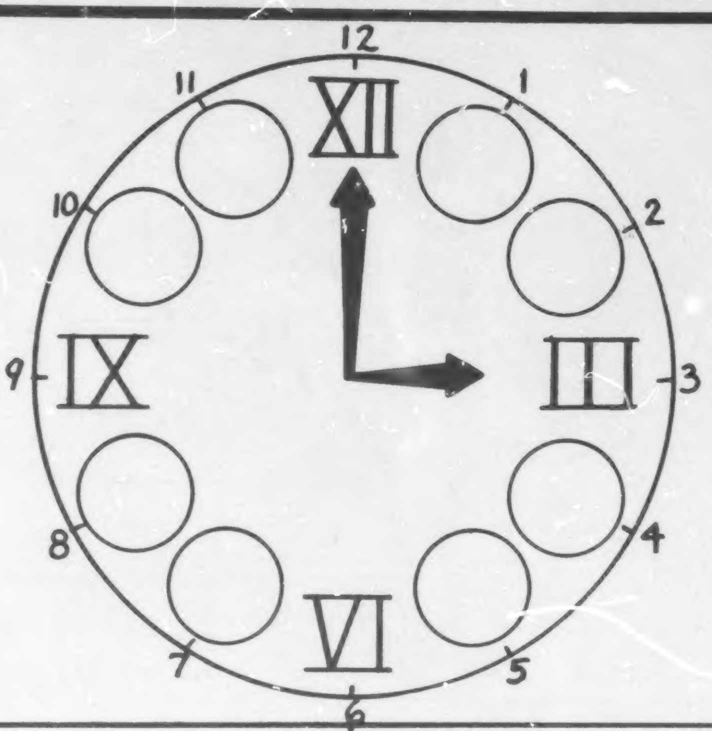


P.O. 2.01.08.02

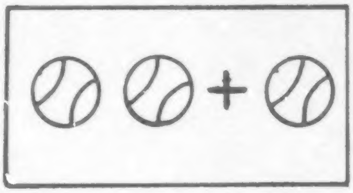
NAME:____ CLASS:__________ DATE:________

I. Fill-in the missing Roman numeral on the clock.
II. Solve each problem. Write the Roman numeral for each answer.

I.


12
XII
1
11
10
2
9
IX
III
3
8
4
7
VI
5
6

II.



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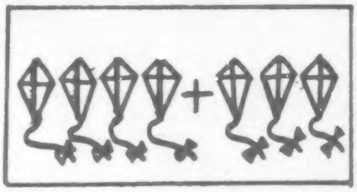

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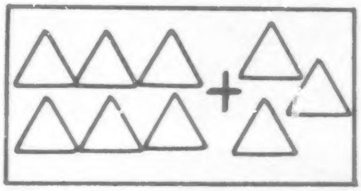

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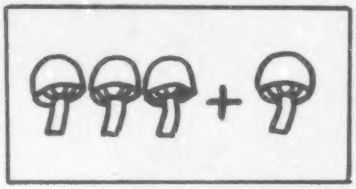

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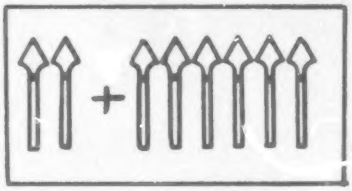

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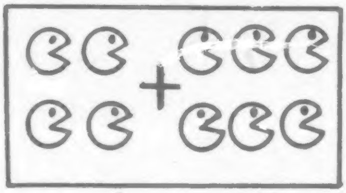

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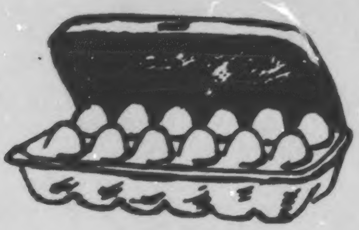
2.10.07 DOZEN AND HALF DOZEN

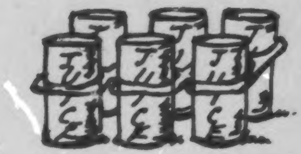
(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.10.07.01A identify a group of twelve objects as a dozen and six objects as a half dozen; e.g.,





2.10.07.02A solve story problems related to skills learned in this module. e.g.,

> Mary used a half dozen eggs to bake bread. Jose used a dozen eggs to bake a cake. How many eggs did they use in all?
>
> They used 18 eggs.

2.10.07

VOCABULARY

TERMS

twelve
dozen
half dozen

GETTING STARTED

Prepare and display a number line from 0 through 25 and two magnetic discs, one with a picture of a frog, and one with a picture of a rabbit. Say, "Mr. Frog and Mr. Rabbit went jumping. Mr. Frog was very tired so he only jumped six spaces and rested." Ask a student to move Mr. Frog six spaces. Say, "Mr. Rabbit just ate carrots. He jumped twelve spaces." Ask a student to move Mr. Rabbit twelve spaces. Say, "Mr. Frog jumped half as far as Mr. Rabbit." Reverse the procedure.

Display magnetic discs and several pieces of colored chalk. Draw two large circles on the chalkboard. Say, "Count twelve magnetic discs and then separate them into two equal groups." Repeat this procedure using six through twelve discs. Erase the two circles and draw one large circle. Say, "Divide the circle into two equal parts. Is there another way that we could divide the same circle into two equal parts?"

Repeat this activity using a square or rectangle.

2.10.07

2.10.07.01 **identify a group of twelve objects as a dozen and six objects as a half dozen**

STRATEGY 1: Prepare and display one empty egg carton. Say, "How many of you have ever gone to the store to buy eggs? How are they sold? What do we call a carton of eggs?" (one dozen) Distribute an egg carton to each student. Say, "How many eggs can fit in an egg carton? Count the number of sections. A dozen eggs means 12 eggs." Write 1 dozen = 12 on the chalkboard.

Hold up one egg carton and divide it in half. Hold up one half of the carton and say, "How many eggs will fit into these spaces? (6) Can we call this one dozen? This is called a half dozen because there are only six spaces." Write one half dozen = 6 on the chalkboard.

STRATEGY 2: Prepare empty egg cartons and an empty cupcake tin. Hold up the cupcake tin and say, "Who can tell us how many cupcakes I can bake in this tin? (12) What is another name for a group of twelve?" Write one dozen = 12 on the chalkboard. Say, "What can we buy that we sometimes eat for breakfast and is sold by the dozen?" (eggs) Hold up the egg carton and say, "How many eggs fit in this carton? Count the number of spaces. This is also called a dozen because there are 12. I went to the store but I didn't buy a dozen eggs." Divide a carton in half. Say, "I bought this amount." Hold up half the carton and say, "Who can tell us how many eggs I bought? Count the number of spaces. I bought six eggs. This is called a half dozen." Write one half dozen = 6 on the chalkboard.

2.10.07

2.10.07.02 **solve story problems related to skills learned in this module**

STRATEGY 1: Display several empty egg cartons and a supply of interlocking cubes in two colors, e.g., yellow and green. Say, "Two teams went on an egg hunt. Team A (yellow) found six eggs." Ask a student to place six yellow cubes in an egg carton. Say, "Team B (green) also found six eggs." Ask another student to place the six green cubes in the same egg carton. Say, "How many eggs did they find in all? What do we call twelve eggs? What do we call six eggs?"

STRATEGY 2: Say, "Mother went to the bakery and bought some doughnuts. She bought a half dozen jelly doughnuts and a half dozen strawberry doughnuts." Draw the doughnuts on the chalkboard. Say, "How many doughnuts did she buy altogether?" Ask a student to count the number of jelly and strawberry doughnuts. Say, "A half dozen plus a half dozen equals one dozen or twelve."

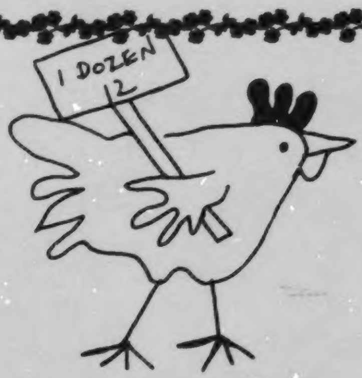
Repeat this procedure adding one dozen and a half dozen.

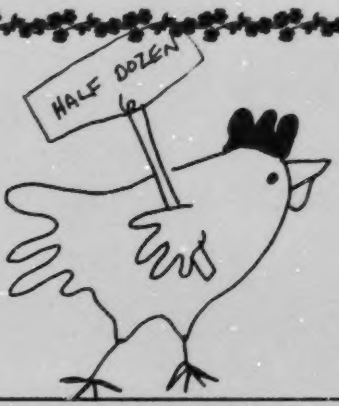
P.O. 2.10.07.01

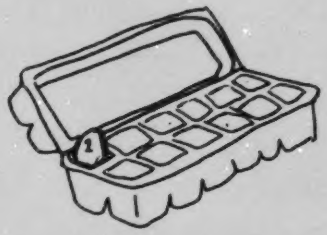
NAME: ______________________ CLASS: __________ DATE: ________

A. Draw the following.

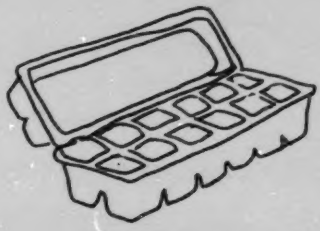
B. Circle the correct answer - more or less?



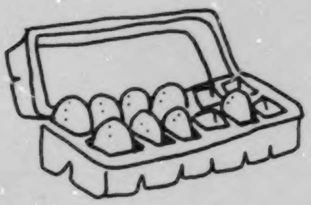




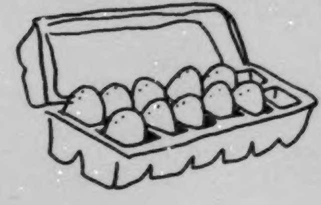
Draw one dozen eggs.



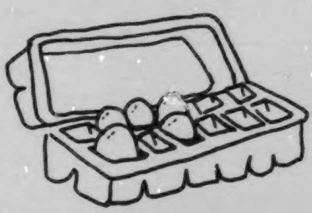
Draw a half dozen eggs.



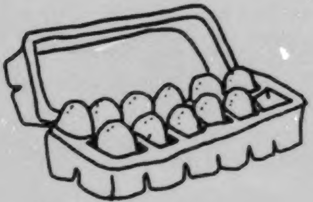
(More or Less) than $\frac{1}{2}$ dozen.



(More or Less) than a dozen.



(More or Less) than $\frac{1}{2}$ dozen.



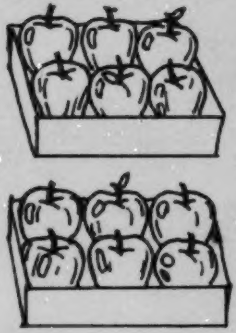
(More or Less) than a dozen.

P.O. 2.10.07.02

NAME:______________________________CLASS:________DATE:________

Solve each problem. Be sure to show the work for each problem.

Mother bought 6 apples. Father bought 6 apples. How many apples did they buy?



6

+6

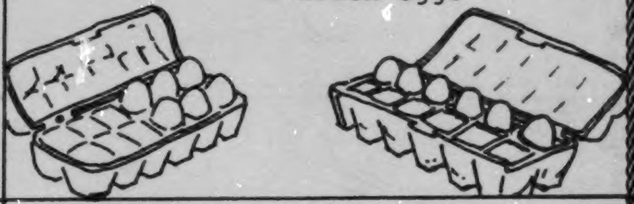
1 dozen

John ate a half dozen eggs. Joe ate a half dozen eggs. How many eggs did they eat?

a half dozen

+a half dozen

a dozen eggs



1) Mother bought a dozen chocolate cookies and a half dozen vanilla cookies. How many cookies did she buy?

2) Henry has 8 red pencils and 4 blue pencils. How many pencils does he have in all?

3) Mrs. Garcia bought a dozen oranges. Her son bought a half dozen more. How many oranges did they buy in all?

4) I ate 4 jelly and 2 cherry doughnuts. How many doughnuts did I eat in all?

Unit 33

2.10.08 MONEY - MAKE CHANGE THROUGH THE VALUE OF A DOLLAR

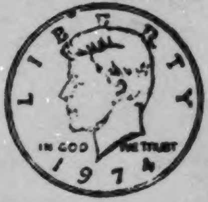
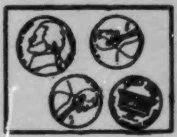
(1-2 lessons)

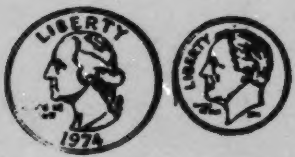
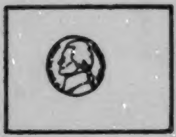
PERFORMANCE OBJECTIVES

The student will be able to...

2.10.08.01B make change through the value of fifty cents;

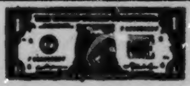
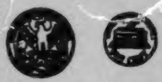
e.g.,

GIVEN	PRICE	CHANGE
	42¢	

GIVEN	PRICE	CHANGE
	30¢	

2.10.08.02B use combinations of coins to make change through the value of one dollar.

e.g.,

cost of item	paid with	change
74¢		

2.10.08

VOCABULARY

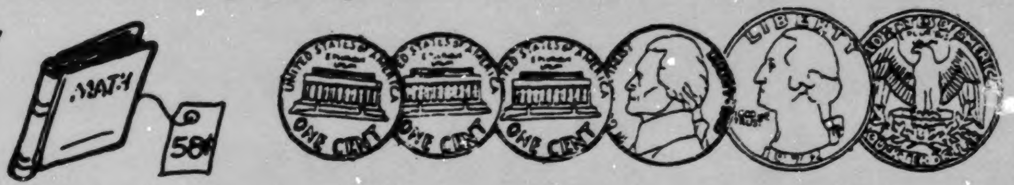
TERMS

change
cost

GETTING STARTED

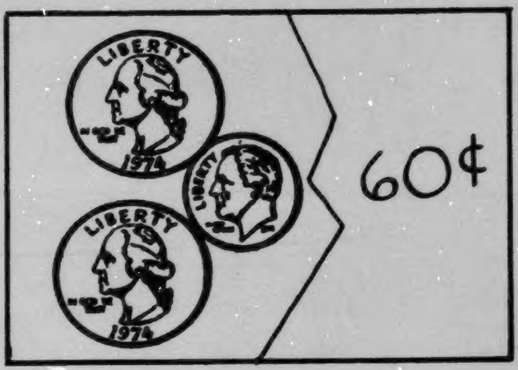
Prepare and distribute toy money to each student. Label several classroom items, e.g., ruler 10¢, eraser 15¢, book 80¢, pencil 5¢, book 58¢. Display one item at a time and ask the students to show the coins necessary to buy each item.

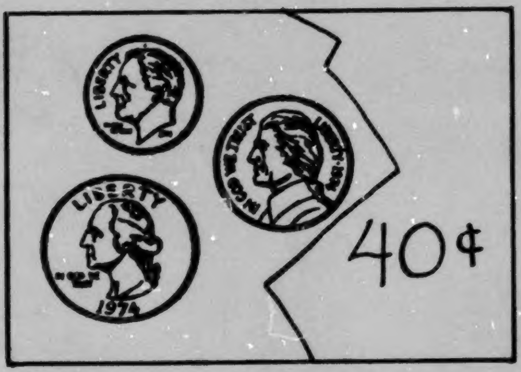
e.g.,



Construct a set of money puzzle cards. Ask individual students to complete the puzzles. Store the puzzle pieces in a shoebox.

e.g.,





2.10.08

2.10.08.01 make change through the value of fifty cents

STRATEGY 1: Distribute toy money in penny, nickel, dime quarter and half dollar denominations. Arrange the students in pairs. Say, "One student will be the storekeeper and the other the customer. This book costs 35¢. All customers should pay with a half dollar. The storekeepers will then give change." Write 50¢ - 35¢ = 15¢ on the chalkboard. Ask students what coins they would give to make 15¢, e.g., 1 dime + 1 nickel, 15 pennies, 1 dime + 5 pennies, 10 pennies + 1 nickel, 3 nickels, 2 nickels + 5 pennies.

Write the following chart on the chalkboard.

Given	Price	Change
50¢	35¢	15¢
25¢	18¢	____

Repeat this procedure with other items allowing the students to change roles.

STRATEGY 2: Display a flannel board with coin cutouts. Display an item. Say, "We are going shopping. This item cost 37¢." Place 37¢ on the flannel board. Say, "I only have two quarters to give the shopkeeper. How much change will he/she give me? When I give the shopkeeper 50¢, he/she will take away 37¢ for the cost of the item. How much change should the shopkeeper give me? Who can write the number sentence for this problem?" (50¢ - 37¢ = 13¢) Discuss various ways to make 13¢.

Repeat this procedure with similiar items.

2.10.08

2.10.08.02 use combininations of coins to make change through the value of one dollar

STRATEGY 1: Prepare play money and label various items for a sale with prices such as 74¢, 82¢, 65¢. Give several students a dollar bill. Ask them to purchase an item with the dollar. Ask a student how much change he/she should receive? Say, "What coins could you get as change?"

Repeat this procedure with other students buying items.

STRATEGY 2: Distribute toy money to pairs of students. Display this chart.

You have	You Spend	Change
25¢	17¢	
$1.00	75¢	
75¢	65¢	
95¢	88¢	
80¢	50¢	

Direct the students to use toy money to make the amount they have, and then take away what is spent to make change.

P.O. 2.10.08.01

NAME: ______________________ CLASS: __________ DATE: ________

Make change.

FRUIT STAND

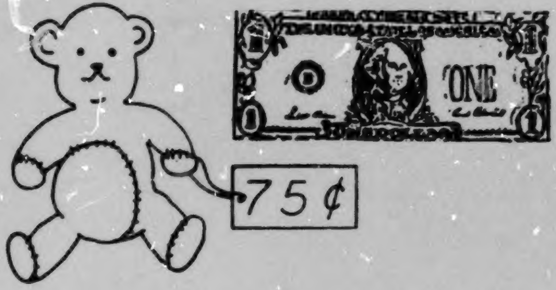
Had	Spent	Change
50¢	37¢	
30¢	18¢	
35¢	26¢	
45¢	25¢	
25¢	11¢	

P.O. 2.10.08.02

NAME: ______________________ CLASS: ________ DATE: ______

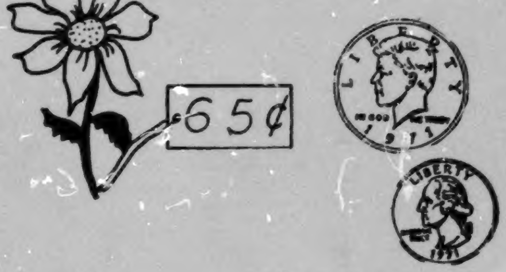
Find the change for each example.

Paid with

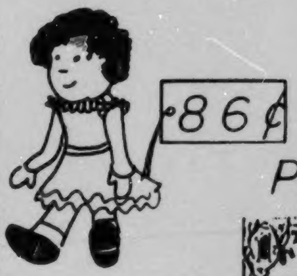


Change ☐

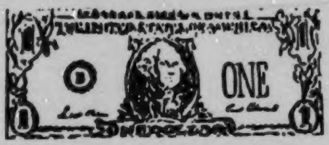
Paid with


65¢
LIBERTY
LIBERTY

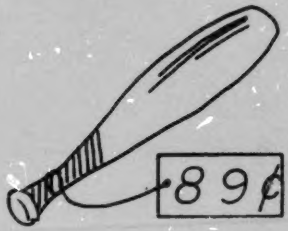
Change ☐



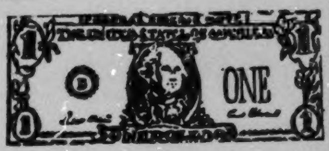
Paid with



Change ☐



Paid with



Change ☐

4

Unit 34

2.12.03 BAR GRAPHS

(1-2 lessons)

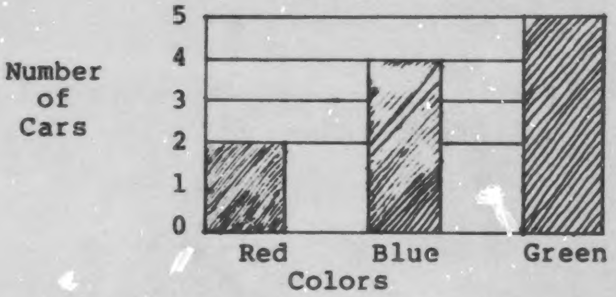
PERFORMANCE OBJECTIVES

The student will be able to...

2.1 2.03.01A collect and structure data based on personal or group experiences to complete a bar graph; e.g.,

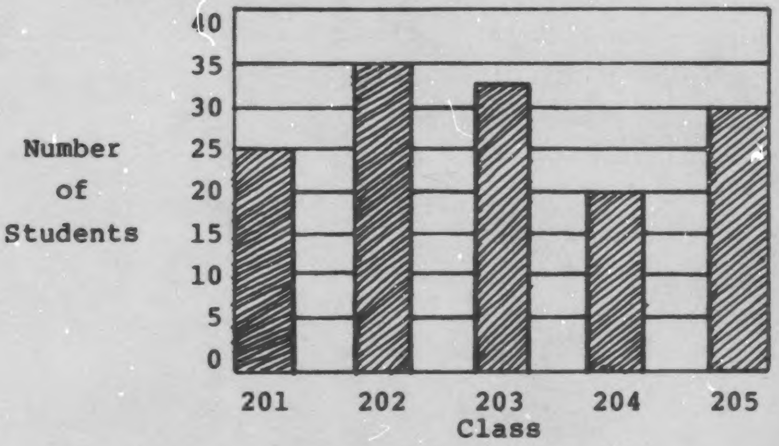
Color of Cars	Number
red	
blue	
green	

Number of Cars We Counted Today



2.12.03.02A interpret a bar graph. e.g.,

Attendance in the Second Grade on Monday.



There are 40 students in each class.

How many students were absent in class 203?

Which class had the most students absent?

2.12.03

VOCABULARY

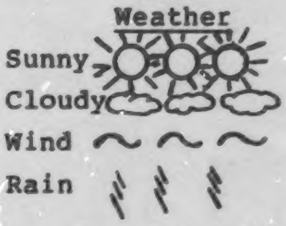
TERMS

bar graph
table
data

GETTING STARTED

Survey the class for their favorite video game. Construct a table for the games and tally the student responses. Ask questions about the data, e.g., Which game is most popular? ...least popular?

Keep a calendar of the month and the weather. Using the previous month's calendar, construct a weather pictograph.



Each symbol represents 1 day.

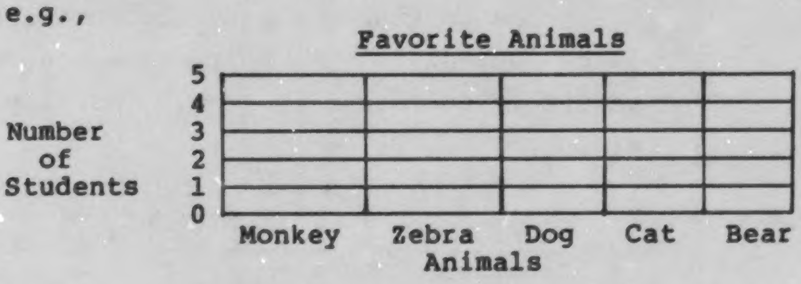
Say, "What kind of information is on this pictograph? How many days were sunny? ...cloudy? ...windy? ...rainy?" Repeat this procedure for other relevant information.

2.12.03

2.12.03.01 **collect and structure data based on personal or group experiences to complete a bar graph**

STRATEGY 1: Prepare one inch graph paper. Say, "What is your favorite animal?" Write the animal names in a chart and tally the data. Say, "We are going to make a bar graph using this data. Write the numbers 1 through 10 along the side of the chalkboard and the names of the animals along the bottom. We name each side of the graph and title it." Demonstrate on the chalkboard.

e.g.,


Favorite Animals

Say, "How many of you liked the monkey best? We make a bar which shows that number." Stress that the number corresponds to the appropriate position or number on the graph. Make the bar. Repeat this procedure for all the other animals.

STRATEGY 2: Write the names of the streets where most of the students live on the chalkboard. Ask how many students live on each street and record the data.

e.g.,

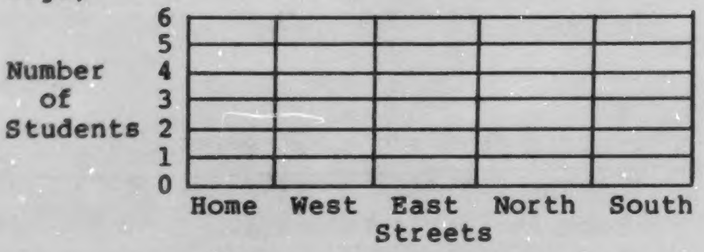
Home St.	7
West St.	6
East St.	3
North St.	1
South St.	2

Using this table, construct a bar graph with the students, making sure they see both axes, label each axis and title the graph.

2.12.03

STRATEGY 2: cont'd

e.g.,



2.12.03.02 **interpret a bar graph**

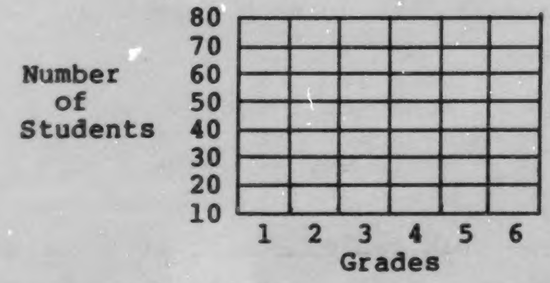
STRATEGY 1: Say, "It is necessary for the people who run the lunchroom to know how many students eat school lunch each day. This helps them keep their inventory for ordering food." Display a chart. e.g.,

Lunches for Tuesday

Grade	1	2	3	4	5	6
Number of Students	30	40	50	20	60	70

Say, "Once they get the number of students who have eaten, they put the results on a bar graph. Let's write the numbers, counting by 10's, on the left side of the graph paper and each grade along the bottom. All graphs need a heading and labels. e.g.,

Lunches for Tuesday



STRATEGY 1: cont'd Say, "How many first graders ate lunch on Tuesday? (30) Color a bar to the 30 line." Repeat this procedure for each grade. Upon completion, ask various questions about the graph, e.g., Which grade ate the most/least lunches on Tuesday?

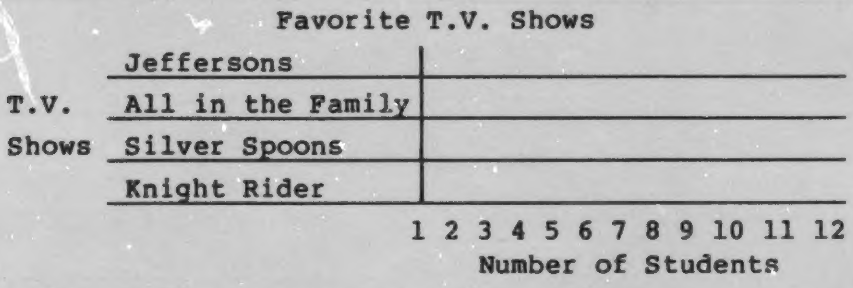
STRATEGY 2: Survey favorite television shows, record the results on a chart, and distribute a copy to each student.

e.g.,

Show	Number who liked the show
Jeffersons	6
All in the Family	1
Silver Spoons	10
Knight Rider	12

Prepare and distribute graph paper to each student. Say, "We can make a bar graph from the information on this chart. Write the names of the television shows along the left side of the graph and label these rows T.V. Shows. Write the numbers 1 through 20 along the bottom and label these columns Number of Students. Title the graph Favorite T.V. Shows."

e.g.,

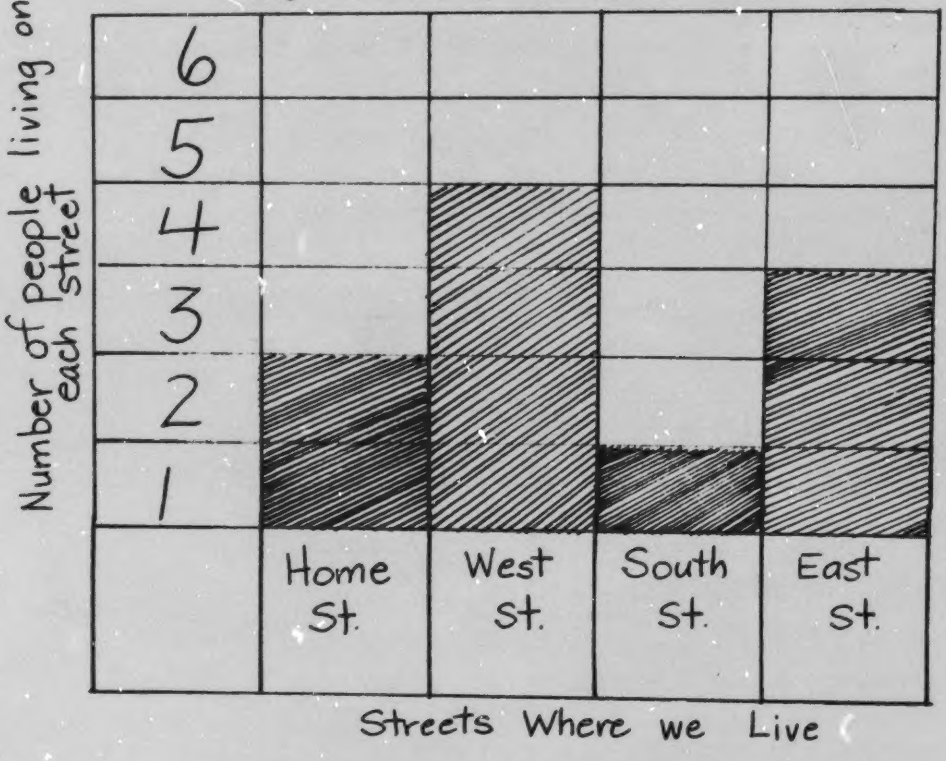


Ask the students to color each bar horizontally to show the number of students who like each show.

P.O. 2.12.03.01

NAME:______________________________ CLASS:________ DATE:_______

The Streets Where We Live



If we study the graph we can find out how many people live on each street.

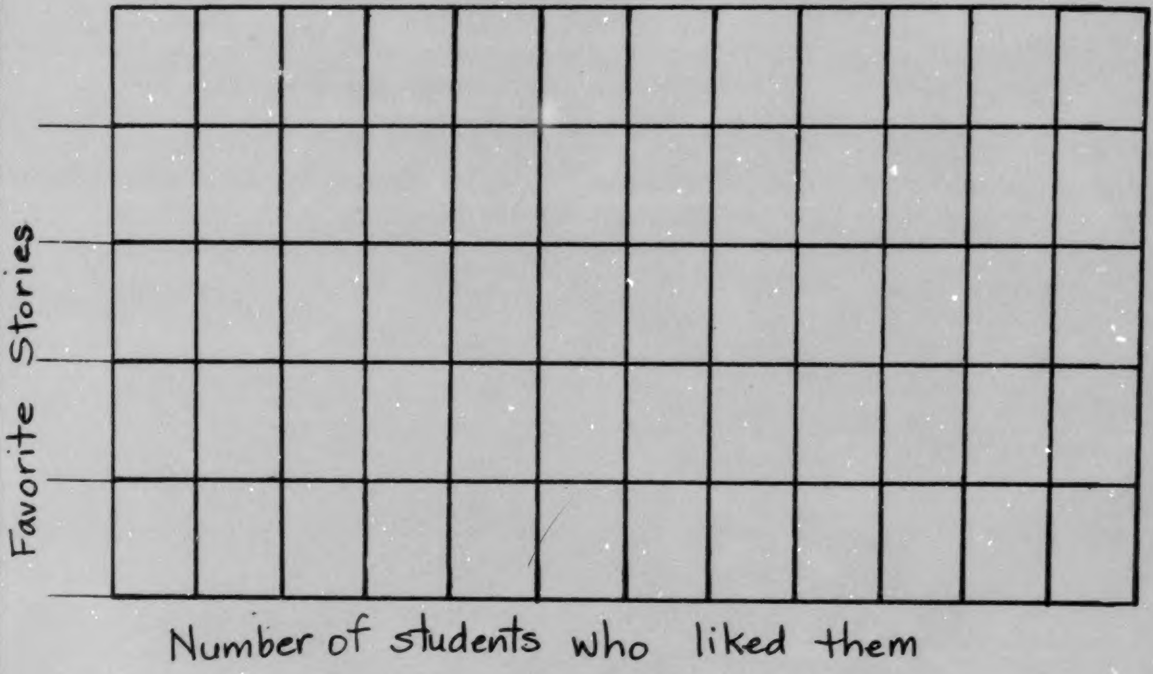
1. How many people live on Home Street ?__________
2. How many people live on East Street ?__________
3. How many people live on West Street ?__________
4. How many people live on South Street ?__________

P.O. 2.12.03.02

NAME: ____________________ CLASS: ________ DATE: ________

Make a bar graph using the information in the chart.

Favorite Stories	Number of Students who like them
Wizard of Oz	𝍸 𝍸
Cinderella	𝍸 |||
Little Red Riding Hood	|||
Alice in Wonderland	𝍸
The Night Kitchen	𝍸 𝍸 ||



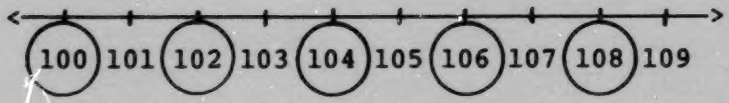
2.01.09 ODD AND EVEN NUMBERS

(2 lessons)

PERFORMANCE OBJECTIVES

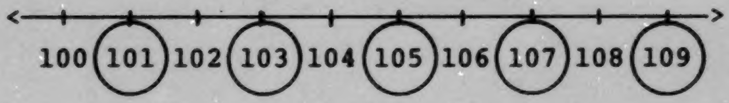
The student will be able to...

*2.01.09.01A identify numbers that are even from 100 through 1000;
e.g.,


100
101
102
103
104
105
106
107
108
109

100 is even

*2.01.09.02A identify numbers that are not even (odd) from 101 through 999;
e.g.,


100
101
102
103
104
105
106
107
108
109

109 is odd, not even

*2.01.09.03A complete odd and even number sequences.
e.g.,

Complete these patterns.

300 , 302 , 304, ☐

301 , 303 , ☐

2.01.09

VOCABULARY

TERMS

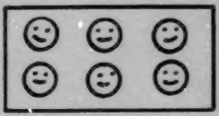
odd
even

GETTING STARTED

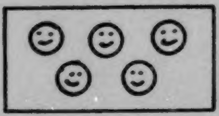
Ask eight students to form pairs in the front of the classroom. Count the students by twos, e.g., 2,4,6,8. Ask nine students to form pairs in the front of the classroom. Count the students by twos, e.g., 2,4,6,8. Say, "We have one student without a partner. He/she is the extra one. The extra one tells us that 9 is called an odd number. The numbers 0,2,4,6,8,10,12... are even numbers and the numbers 1,3,5,7,9,11... are odd numbers." Show a card with a number fact written on it and ask the students to tell whether the answer is odd or even, e.g., $\begin{array}{r}3\\+4\\\hline 7\end{array}$. Seven is an odd number.

Tape several large cards with drawings of happy faces to the chalkboard. Ask a student to identify the number of happy faces on each card.

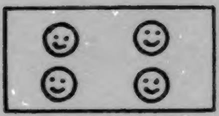
e.g.,



6



5



4

Say, "On which card does each face have a partner? These numbers are called even numbers. What do we call the other numbers? They are odd numbers."

2.01.09

2.01.09.01 **identify numbers that are even from 100 through 1000**

STRATEGY 1: Write these numbers on the chalkboard: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20... Say, "Can anyone see a pattern?" (The two times table or adding twos.) Write 122, 124... 846, 848 on the chalkboard. Say, "What digit is in the ones place in each of these numbers? If a number is even, it will always have a 0,2,4,6, or 8 in its ones place."

Present a story problem to the class. Say, "The PTA is selling tickets to the school picnic. The tickets come in booklets numbered from 100 through 1000. Only the students in the school can buy the even numbered tickets because they cost less money. Of the following ticket numbers, not yet sold, which tickets could Joseph, of Class 2-304, buy? Tickets 145, 256, 758. Why?"

STRATEGY 2: Say, "Write five 3-digit numbers on a sheet of paper. Exchange papers with your neighbor. Circle the even numbers. Why is the number even? Remember to look at the ones place."

2.01.09.02 **identify numbers that are not even (odd) from 101 through 999**

STRATEGY 1: Say, "What kind of numbers are these: 1, 3, 5, 7, 9, 33, 35, 37? What digits are in the ones place? These are odd numbers. Who can give an example of an odd number?" Display a number line labeled 101 through 111. Say, "Who can identify the odd numbers? How can we identify odd numbers?" (The number in the ones

STRATEGY 1: cont'd

place tells us that the number is odd.)

Repeat this procedure for numbers through 1000.

STRATEGY 2:

Prepare Bingo cards with 3-digit numbers. Say, "We are going to play Odd Number Bingo." Distribute the cards. Call out one number, e.g., 343. If the student has that number on his/her card, he/she will cover it. Say, "You are only to cover the odd numbers that are called." Call out nine more numbers, e.g., 242, 187, 584. The student who has the most odd numbers covered is the winner. Ask the winner to call out his/her numbers to check for correctness.

2.01.09.03 **complete odd and even number sequences**

STRATEGY 1:

Prepare and display a number chart from 100 through 200, with the even numbers written in red and odd numbers written in blue. Say, "Study the chart. Read the red numbers starting with 100. With what digit does each number end? (0, 2, 4, 6, 8) What kind of numbers end with 0, 2, 4, 6, or 8?" (Even numbers) Point to 156 and say, "Who can locate the next even number? Who can read the blue numbers on the chart starting with 121 and stopping at 129? With what digits do these numbers end? (1, 3, 5, 7, 9) What kind of numbers end with 1, 3, 5, 7, and 9?" (Odd numbers) Point to 131 and ask for the next odd number.

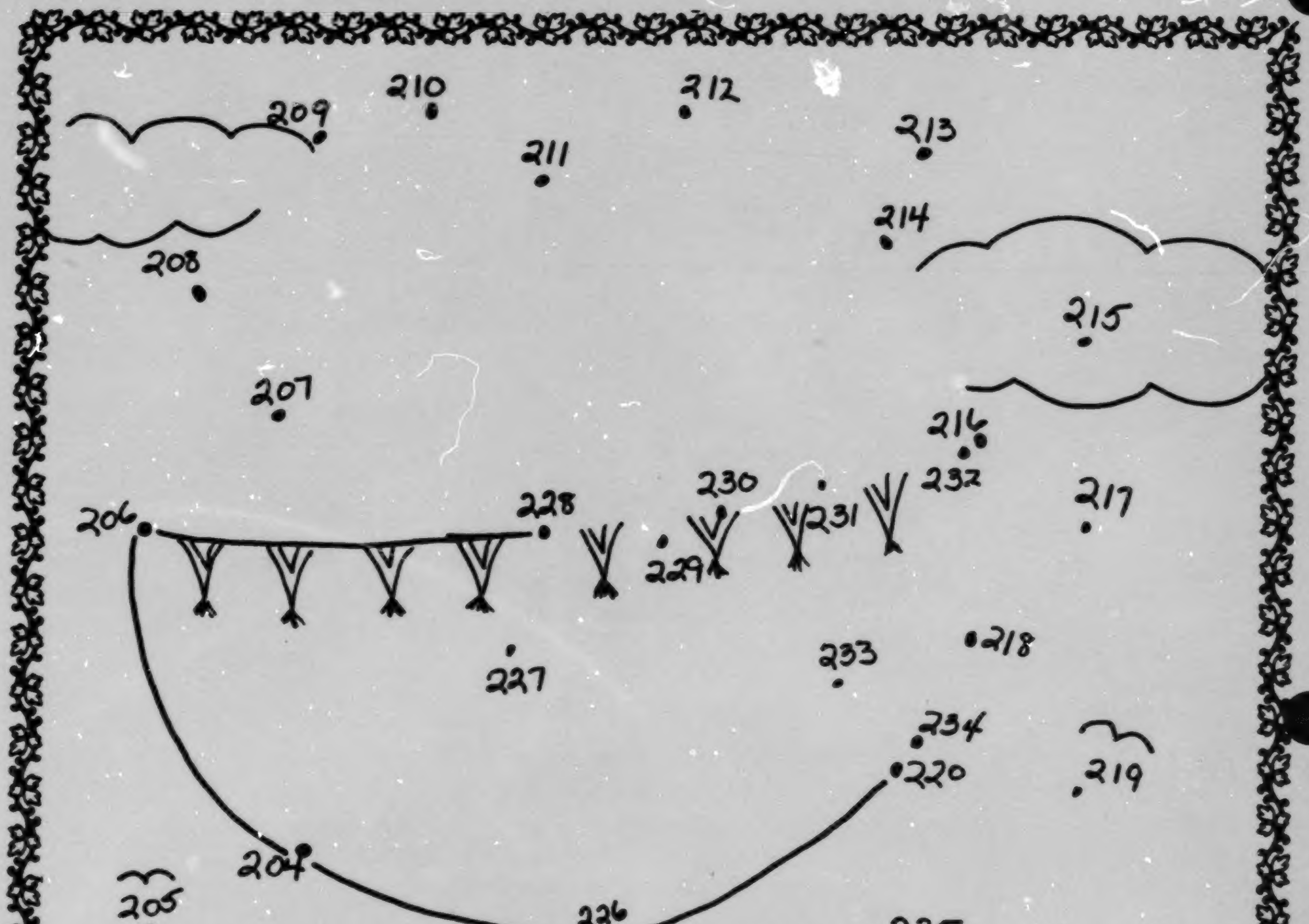
STRATEGY 2:

Write 356 on the chalkboard. Ask several students to name the next even numbers until four or five numbers have been given. Write the numbers on the chalkboard as they are called. Repeat this procedure with odd numbers using different starting points, e.g., 251, 437.

P.O. 2.01.09.01

NAME:____________________________________CLASS:_________DATE:_______

Connect the dots in order using only even numbers.
Color the picture.


210
212
209
213
211
214
208
215
207
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230
232
228
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206
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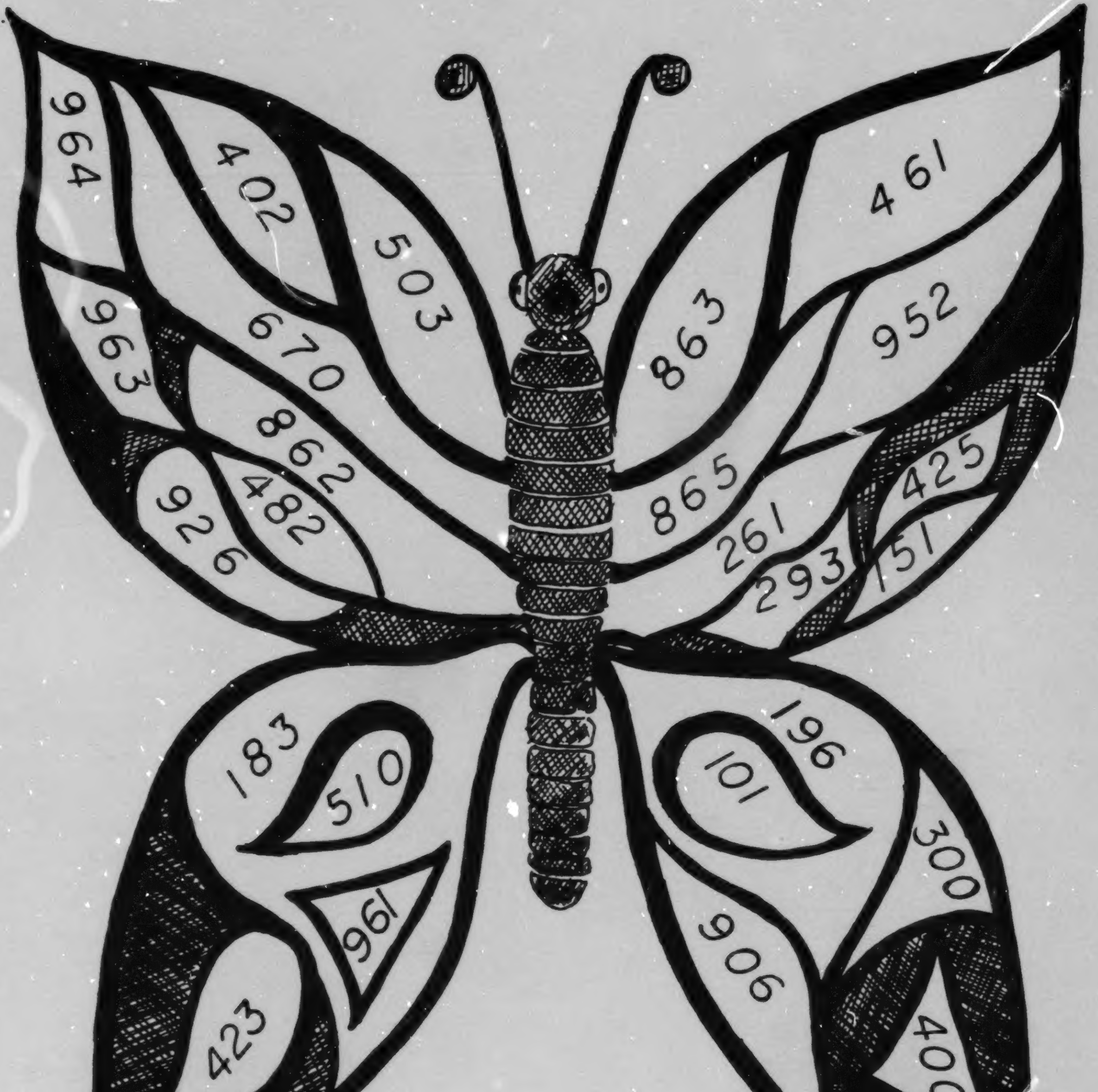
218
233
227
234
220
219
204
205
226
235
203
225
221
224
222
202
223

P.O. 2.01.09.02

NAME:____**CLASS:**__________**DATE:**________

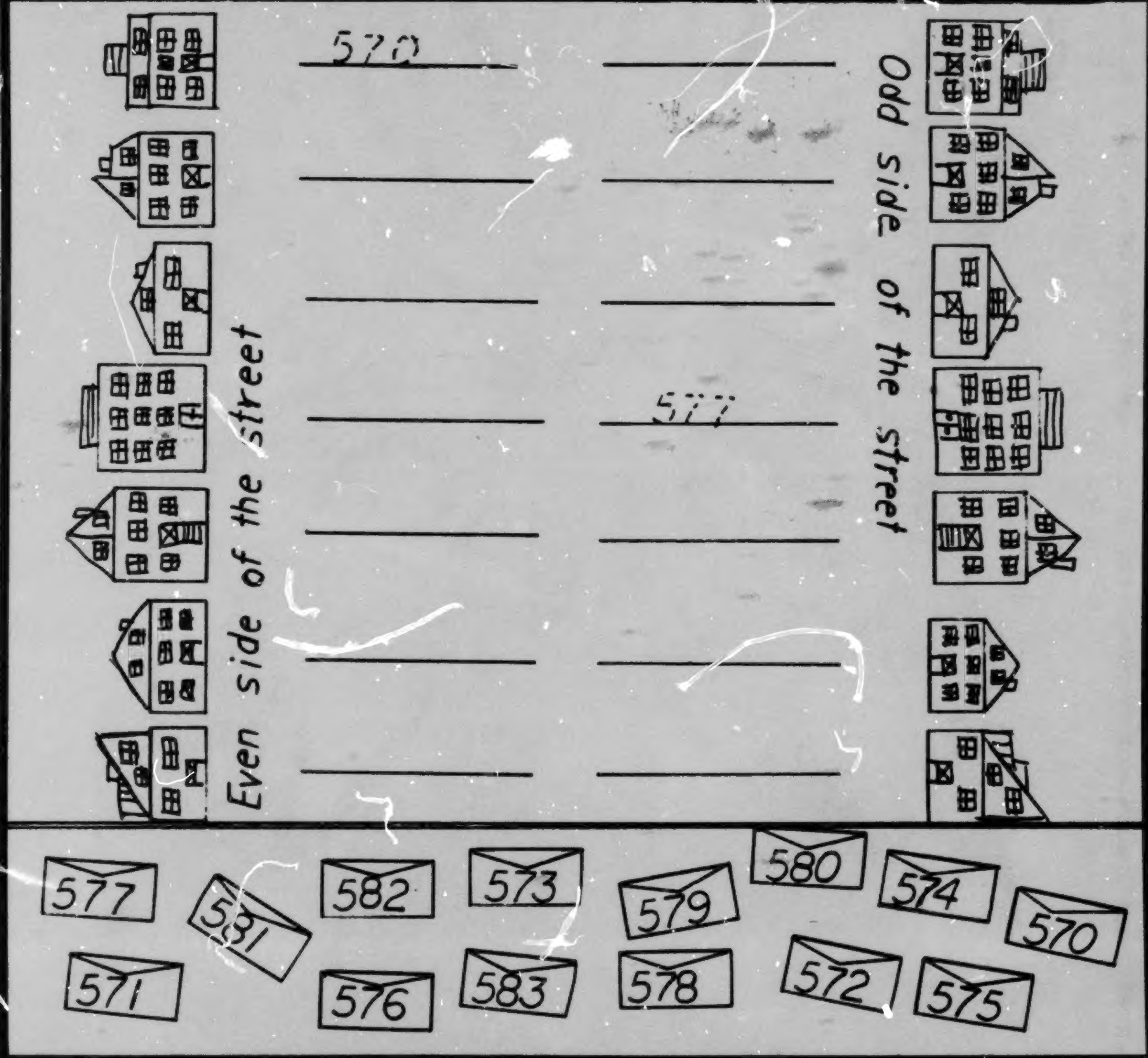
Color all odd numbers with a yellow crayon. Color all even numbers with an orange crayon.


964
402
503
963
670
862
926
482
461
863
952
865
425
261
293
151
183
510
961
423
196
101
300
906
400

P.O. 2.01.09.03

NAME: ______________________ CLASS: __________ DATE: ________

Can you help this mailman? He has dropped his mailbag and his letters became mixed up. Put the odd number addressed letters on the odd side of the street and the even addressed letters on the even side of the street.


Even side of the street
Odd side of the street
570
577
577
581
582
573
579
580
574
570
571
576
583
578
572
575

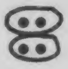
2.04.01 MULTIPLICATION FACTS FOR TWO THROUGH 10

(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

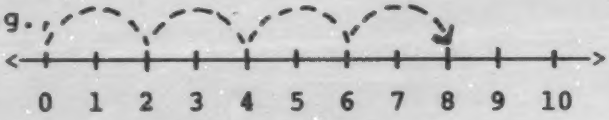
2.04.01.01A count by two;
e.g.,
1 two (2), 2 twos (4), 3 twos (6),
4 twos (8), 5 twos (10)

2.04.01.02B show groups of two;
e.g.,
2 groups of two  = 2 x 2

2.04.01.03B recognize x as the symbol for multiplication;
e.g.,
3 groups of two = 2 + 2 + 2 = 3 x 2

2.04.01.04A demonstrate that multiplication is the process of repeated addition of like addends;
e.g.,
2 + 2 + 2 = 3 x 2

2.04.01.05A use a number line to demonstrate counting by two.
e.g.,



4 groups of two = 8

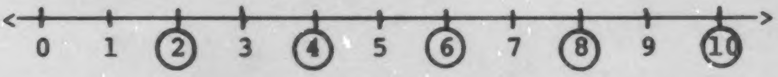
2.04.01

VOCABULARY

TERMS	SYMBOLS
multiply	x
once	
twice	
duplicate	

GETTING STARTED

Draw a number line from 0 through 10 on the chalkboard. Say, "Count by ones through ten. Indicate the number 2 with a pointer. What number comes after two if we skip a number when we count?" (4) Continue this procedure through the number 10.



Ask several students to count by twos starting at 0 and stopping at 10.

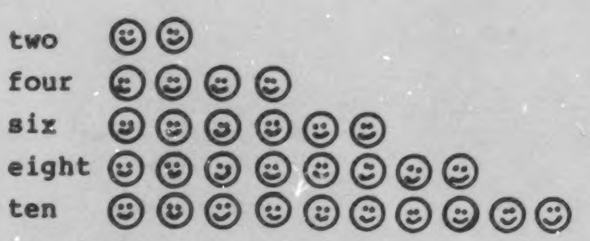
Clap your hands once and say, "How many times did I clap?" Clap twice and say, "How many times did I clap? I am going to clap in groups. Listen carefully because I will ask questions." Clap twice, wait, clap twice and say, "How many groups of claps did you hear?" Repeat the clapping and say, "We only want to count the number of groups."

Repeat this procedure with two, three, four, and five groups of two claps each.

2.04.01

2.04.01.01 **count by twos**

STRATEGY 1: Display the following chart.
e.g.,



Ask a student to point to the word and then to the illustration. Reverse the order by pointing to the pictures and then to the word.

STRATEGY 2: Draw a number line from 0 through 10 on the chalkboard. Point to the number two and say, "My finger is going to skip a number and hop to the next one. Where did I land?" (4) Continue through 10. Say, "If I start at zero and I make one hop of 2 spaces, I will land on 2. If I start at zero and I make two hops of 2 spaces, I land on 4." Repeat this procedure through five groups of two.

2.04.01.02 **show groups of two**

STRATEGY 1: Distribute ten counters (chips, buttons) to each student. Say, "Take four chips. Can you put these chips into two equal groups? Draw your arrangement on the chalkboard. How can we write this in words?" (Write 2 groups of two.)

Repeat this procedure with 3, 4 and 5 groups of two.

STRATEGY 2: Place four objects on the chalkboard in two groups, e.g., 00 00. Say, "How many groups of two are here? (2) How many items are there altogether?" (4) Repeat this procedure using other groups.

2.04.01.03 **recognize x as the symbol for multiplication**

STRATEGY 1: Write these symbols on the chalkboard: +, -, =. Say, "Who can tell us what each of these symbols mean? (Print the word next to each symbol.) These are mathematical symbols. We are going to learn another symbol. Look at the number sentences on the chalkboard."

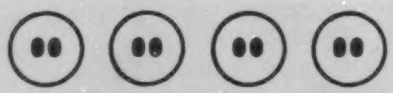
e.g.,

$$2 + 2 = \square$$
$$2 + 2 + 2 = \square$$
$$2 + 2 + 2 + 2 = \square$$
$$2 + 2 + 2 + 2 + 2 = \square$$

Ask the students to solve each example. Say, "Mathematicians decided we need another symbol to save us time, so they invented x. When we see this symbol, we say times. How many times did we add the number 2? (Point to the example 2 + 2 + 2.) We will write 3 x 2 to show we add the number 2 three times. 3 x 2 means we have three groups of 2. How much is 3 x 2?" (6) Repeat this procedure for the remaining addition examples.

STRATEGY 2: Distribute ten discs to each student. Say, "Take eight discs and place them in 4 equal groups of two."

e.g.,



STRATEGY 2: cont'd

Say, "Can you write a number sentence for this picture?" Write 2 + 2 + 2 + 2 = 8 under the drawing. Say, "There is another way to write this." Write 'x' on the chalkboard. Say, "X means times. How many times did we add the number 2? (4) We can say 2 + 2 + 2 + 2 is the same as 4 x 2. This process is called multiplication."

Repeat this procedure using other repeated addition examples.

2.04.01.04 **demonstrate that multiplication is the process of repeated addition of like addends**

STRATEGY 1:

Distribute ten items to each student. Say, "Take eight items. Place the items in groups of 2. How many groups did you make? (4 groups of two) What number sentence tells about this arrangement? (2 + 2 + 2 + 2 = 8) We are adding the same number each time. There is another way to write 2 + 2 + 2 + 2." Write 4 x 2 = 8 on the chalkboard. Say, "This means we have 4 groups of 2."

Repeat this procedure using other repeated additions.

STRATEGY 2:

Write multiplication number sentences on the chalkboard.

e.g.,

5 x 2 = ☐ 4 x 2 = ☐ 3 x 2 = ☐ 2 x 2 = ☐ 1 x 2 = ☐

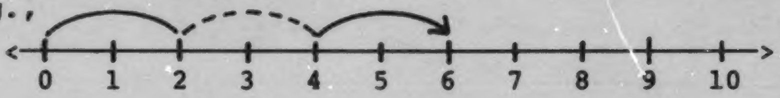
Ask students to read 5 x 2. Say, "What does 5 x 2 mean? (2 + 2 + 2 + 2 + 2) When we write 5 x 2 we are really writing 2 + 2 + 2 + 2 + 2."

Repeat this procedure for the other repeated additions.

2.04.01

2.04.01.05 **use a number line to demonstrate counting by two**

STRATEGY 1: Draw a number line from 0 through 10 on the chalkboard. Say, "Peter Rabbit is at home. His home is zero. He wants to visit his friend who lives at number 6. How do rabbits move? (They hop.) Peter likes to save time so he hops two spaces at a time. How many hops will it take him to get to number 6?" Ask one student to use a piece of colored chalk to illustate Peter's hops. e.g.,



Say, "How many hops did Peter make?" (Peter made three hops.) Write 3 hops of two = 6 or 3 groups of two = 6 on the chalkboard.

Repeat this procedure using other groups of twos.

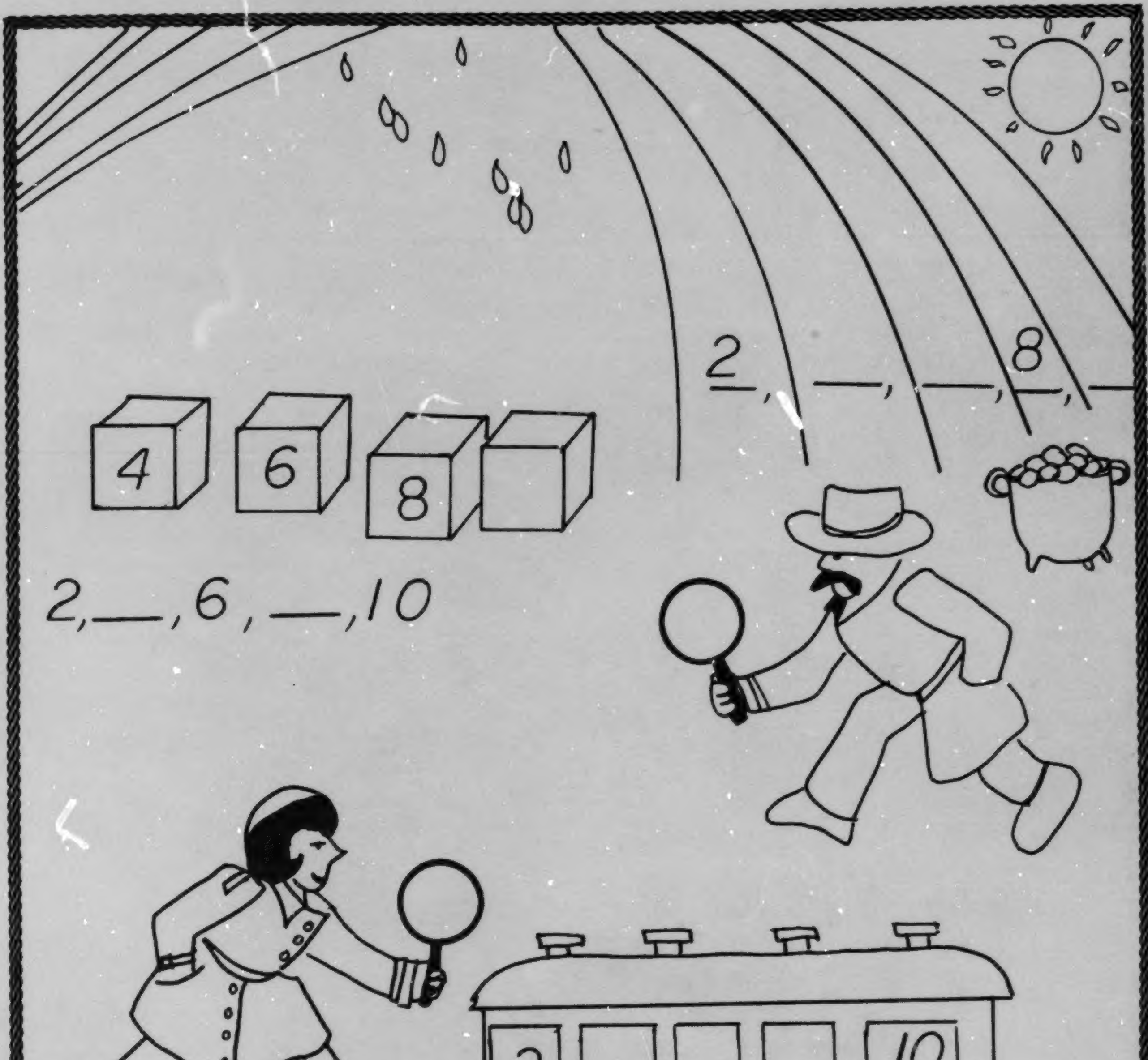
STRATEGY 2: Using masking tape, construct a 0 through 10 number line on the classroom floor. Ask a student to stand at the zero and move two numbers in each step to 8. Ask how many steps it will take the student to reach 8. While the student moves, the other students should count each step. Say, "How many steps did it take?" (4) Write 4 groups of 2 = 8 on the chalkboard.

Repeat this procedure using other students and repeated additions.

P.O. 2.04.01.01

NAME: ______________________ CLASS: __________ DATE: ________

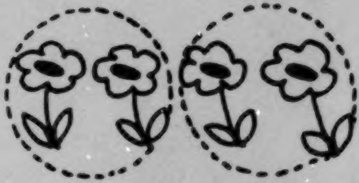
Fill in the missing numbers. Counting by twos.


2, __, __, 8, __
4
6
8
2, __, 6, __, 10
2
10

P.O. 2.04.01.02 -.03

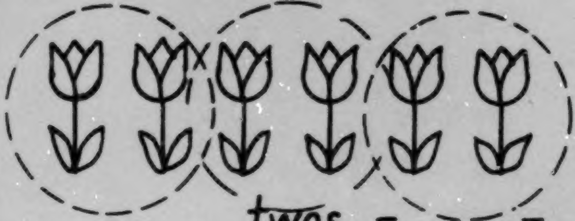
NAME:____________________ CLASS:________ DATE:_______

How many groups of two can you make? Can you write the number stories to go with these groups?



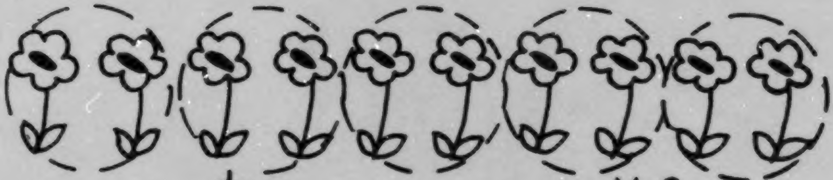
= ___

2 twos = 4 = 2 X 2 = 4



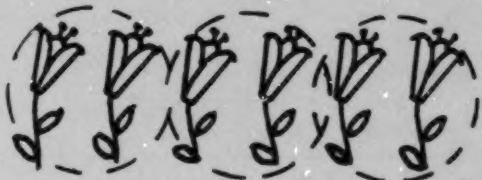
= ___

___ twos = ___ = ___ X 2 = ___



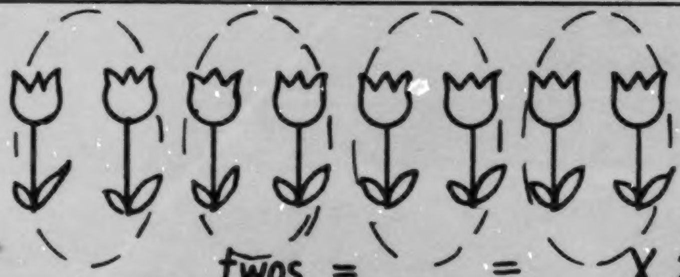
= ___

___ twos = ___ = ___ X 2= ___



= ___

___ twos = ___ = ___ X 2 = ___



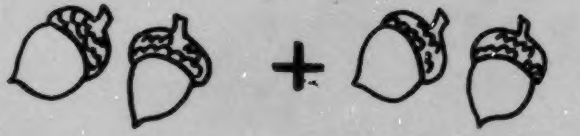
= ___

___ twos = ___ = ___ X 2 = ___

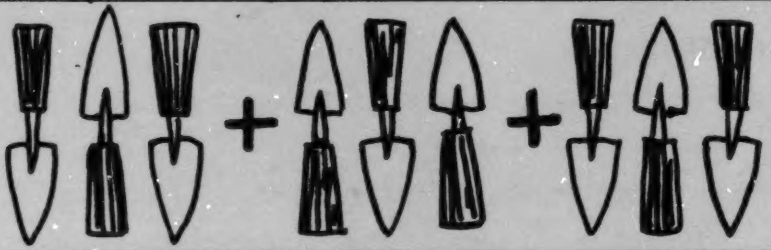
P.O. 2.04.01.03-.04

NAME:____________________ CLASS:__________ DATE:________

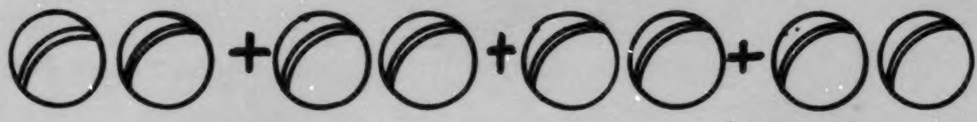
What are the stories for these pictures ?



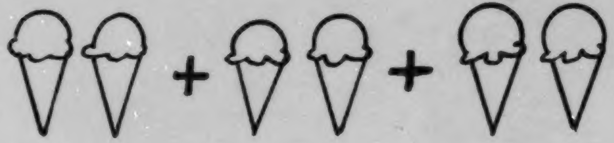
= 2 X 2



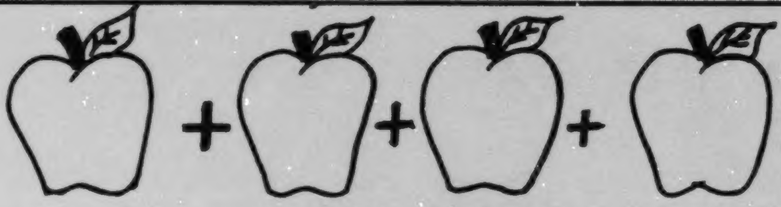
= ___ X ___



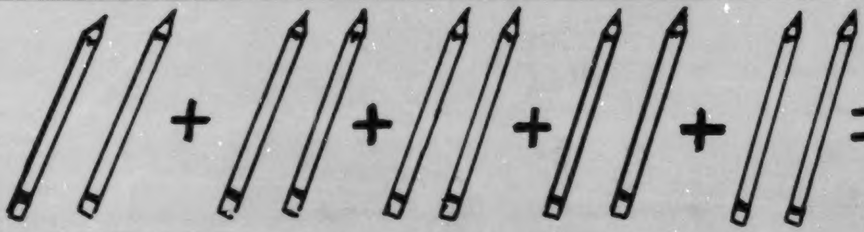
= ___ X ___



= ___ X ___



= ___ X ___

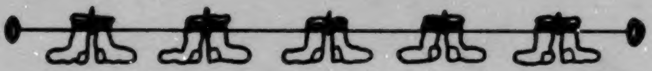


= ___ X ___

P.O. 2.04.01.05

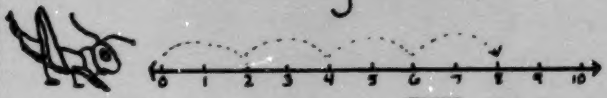
NAME: ____________________ CLASS: __________ DATE: ______

Follow the directions as given below.

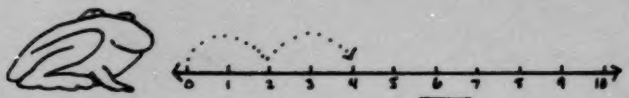


5 twos = 10

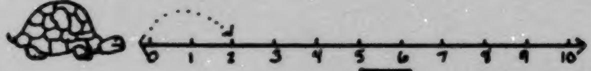
How far did each animal jump?
Fill in the missing number.


0 1 2 3 4 5 6 7 8 9 10

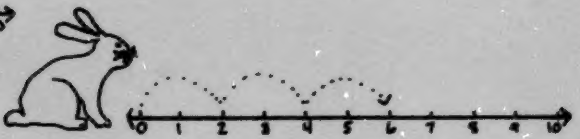
4 twos = ☐


0 1 2 3 4 5 6 7 8 9 10

2 twos = ☐

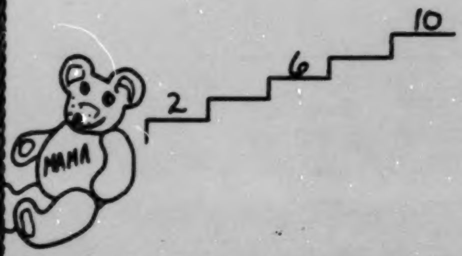

0 1 2 3 4 5 6 7 8 9 10

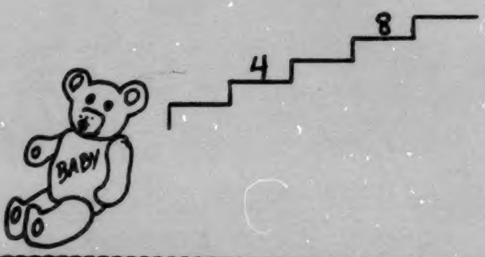
1 two = ☐


0 1 2 3 4 5 6 7 8 9 10

3 twos = ☐

Fill in the missing number on each step.





Unit 37

2.05.01 INTRODUCTION TO DIVISION

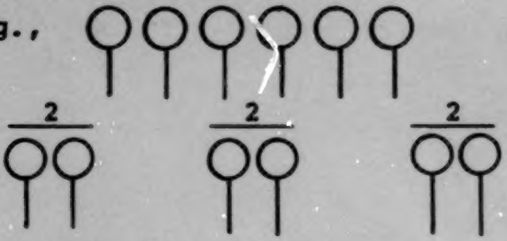
(2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

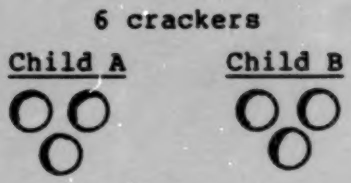
2.05.01.01B demonstrate that division is the separation of a number into equal groups (repeated subtraction);

e.g.,



2.05.01.02B demonstrate that division is a process of sharing;

e.g.,



2.05.01.03B solve story problems related to skills learned in this module.

e.g.,

Tom has six toy trucks. If one toy garage holds three trucks, how many garages does he need to park all of his trucks?

2.05.01

VOCABULARY

TERMS

division
separation
sharing

GETTING STARTED

Draw a number line from 0 through 25 on the floor or on the chalkboard. Say, "When it is your turn, take giant steps of two spaces at a time until you land on ten. How many steps did you take?" (5) Repeat this procedure for threes through 15, fours through 20 and fives through 25.

Draw two flower pots, with one flower in each pot, on the chalkboard. Each flower should have five petals. Say, "How many petals are on each flower? How many petals in all?" Write 2 flowers have 10 petals. Continue this procedure using other examples through 5 flowers with 25 petals.

2.05.01

2.05.01.01 **demonstrate that division is the separation of a number into equal groups (repeated subtraction)**

STRATEGY 1: Prepare and distribute 25 counting objects (blocks, chips, beans) to each student. Say, "Place ten blocks in front of you. Take away a group (set) of five. How many groups of five can you take away? Ten counters separated into groups of five make two groups. There are 2 fives in 10. When we separate something into several equal groups we are dividing."

Repeat this procedure using other numbers.

STRATEGY 2: Tape fourteen paper flowers to the chalkboard. Ask seven students, one student at a time, to remove a group of two flowers. Ask a student to count the groups. Say, "Fourteen flowers, with two in each group, make seven groups. There are 7 twos in 14."

Repeat this procedure forming other groups using varying numbers of flowers.

2.05.01.02 **demonstrate that division is a process of sharing**

STRATEGY 1: Prepare and distribute 25 counters to each pair of students. Say, "Take 12 counters. Share them with your partner. Each of you must have an equal number. How many groups will we make? How many counters will be in each group?" Draw the following diagram on the chalkboard: ●●●●●● ●●●●●●. Say, "When 12 counters are shared by two people, there will be six in each group. There are 6 twos in 12."

Repeat this procedure using other numbers through five groups of 5.

STRATEGY 2: Prepare and display a large oak tag orange cut into six equal parts. Ask three students to come to the front of the room and share the pieces equally. Give one piece to each student until all have been distributed. Say, "How many pieces does each student have?" (2)

Repeat this procedure using other objects.

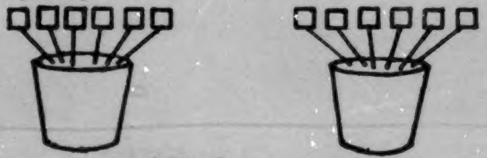
2.05.01.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Prepare three boxes and twelve discs to use to demonstrate this story. Say, "Mother must put 12 cookies into three lunch boxes. How many cookies will she put into each lunch box?" Ask a student to play the part of the mother and place an equal number of cookies into each box. Say, "How many cookies are in each lunch box? Who can give us a number sentence about what was done?" (There are 4 threes in 12.)

Repeat this procedure with other stories.

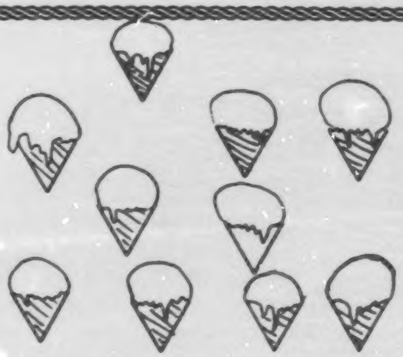
STRATEGY 2: Say, "Frank has twelve blocks. His mother tells him to place the blocks into two pails so that he can carry them upstairs. She tells him to put the same number of blocks in each pail so that it will be easier to carry. How many blocks will Frank put in each pail?" Draw the two pails and twelve blocks on the chalkboard. Ask several students to draw a line from each block to a pail until all blocks have been put into a pail. Say, "How many blocks are in each pail? (6) Is the number the same?" (Yes)

e.g.,



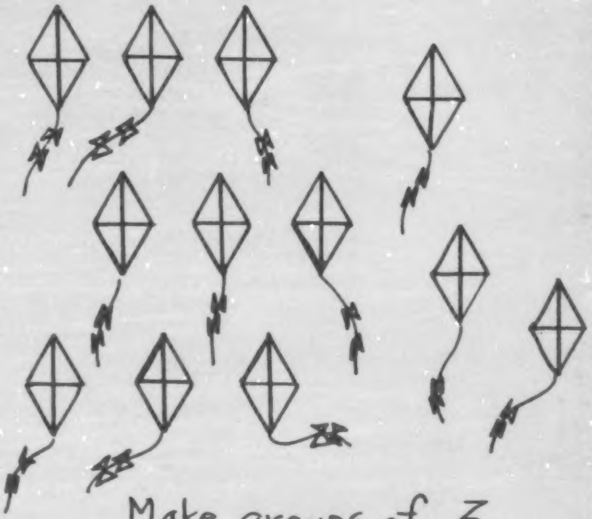
P.O. 2.05.01.01

NAME: ______________________ CLASS: ________ DATE: ________



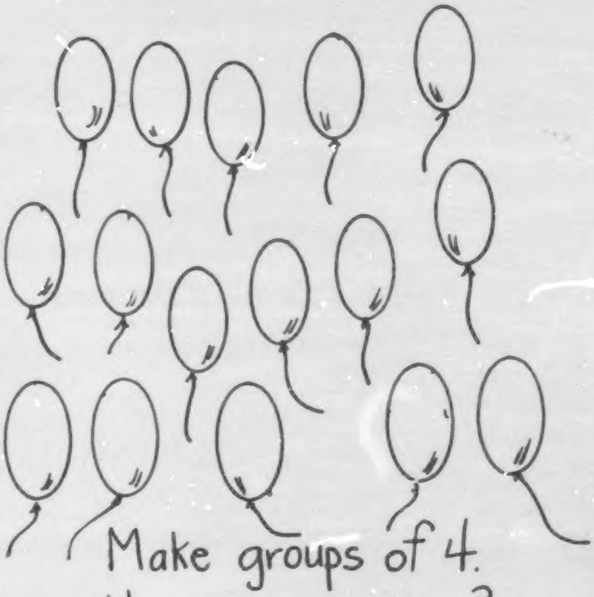
Make groups of 2.

How many groups? _____



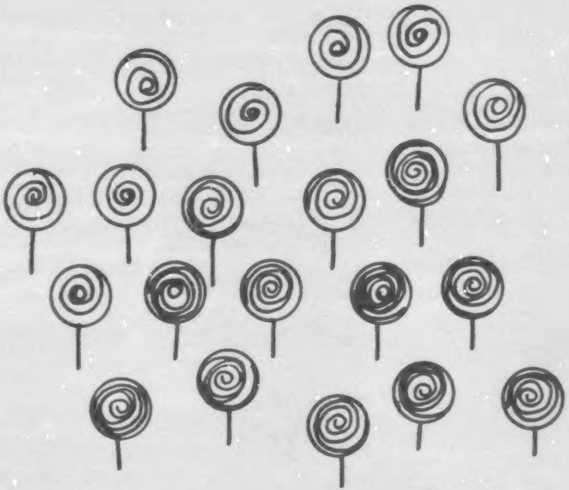
Make groups of 3.

How many groups? _____



Make groups of 4.

How many groups? _____



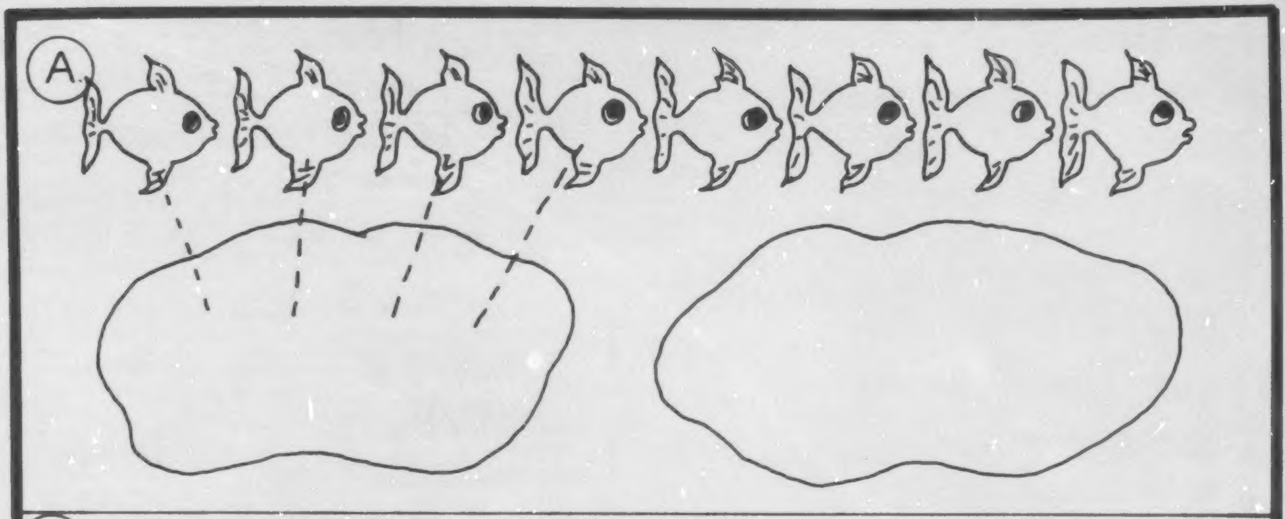
Make groups of 5

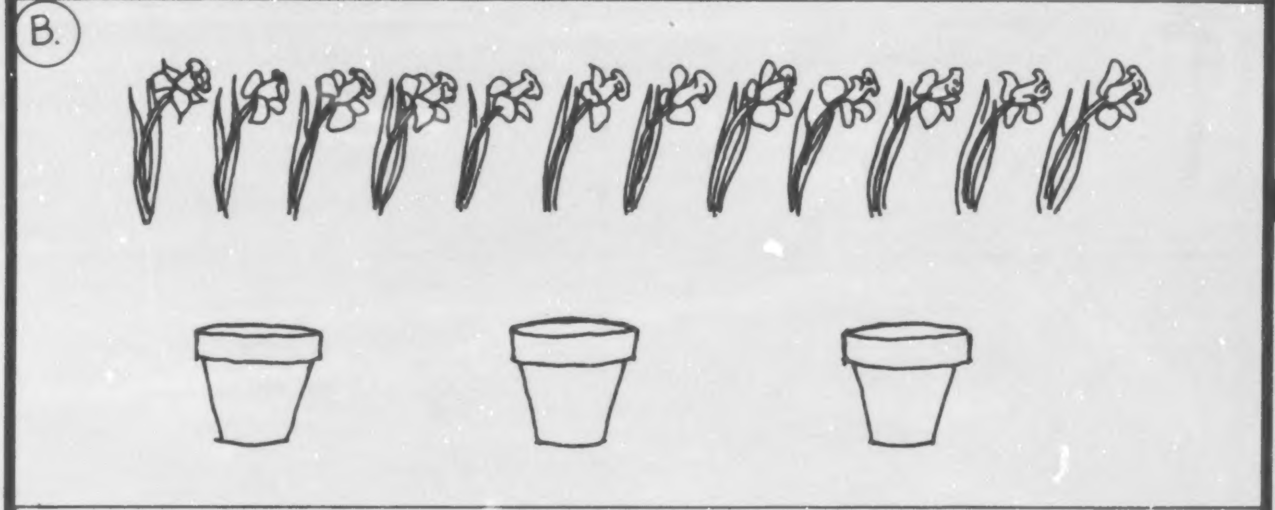
How many groups? _____

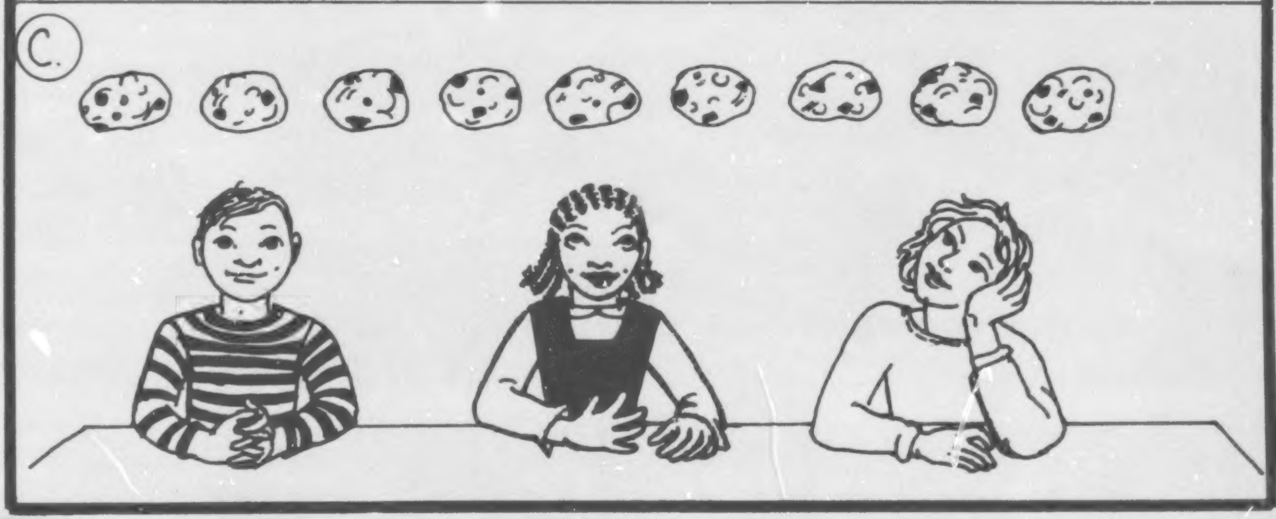
P.O. 2.05.01.02

NAME:______________________ CLASS:__________ DATE:________

Put the same number of objects in each group.





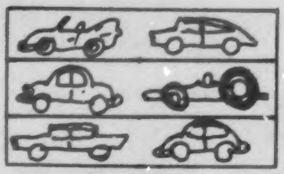


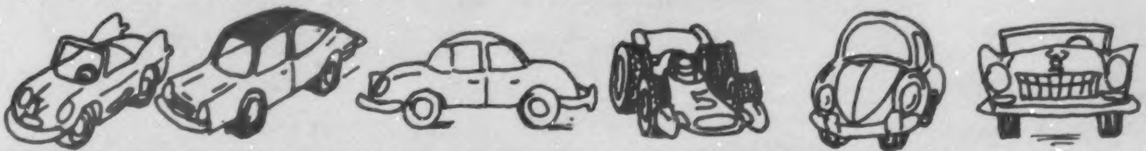
P.O. 2.05.01.03

NAME:____________________ CLASS:________ DATE:_______

Read and solve each story problem.

Jerry has 6 toy cars.
If he can put 2 toy cars
in each box, how many
boxes does he need to
put away all his cars?

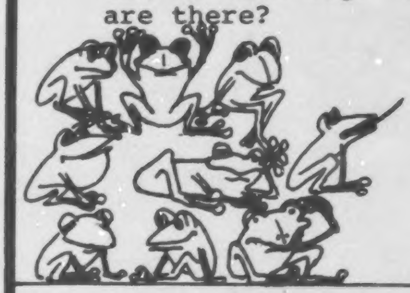




① Mother has 8 apples.
She can put 4 apples in each basket. How many baskets does she need?

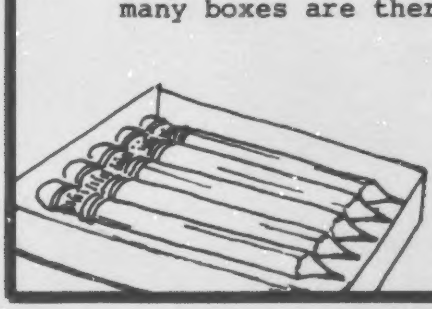
② Ms. Jones has 6 books. She can put 2 books on a table. How many tables does she need?

③ There are 9 frogs. Three frogs are on each log. How many logs are there?



④ There are 4 lollipops. Each youngster gets 2 lollipops. How many youngsters are there?

⑤ There are 10 pencils. Five pencils are in each box. How many boxes are there?



⑥ There are 12 stars. 3 stars are in each circle. How many circles are there?

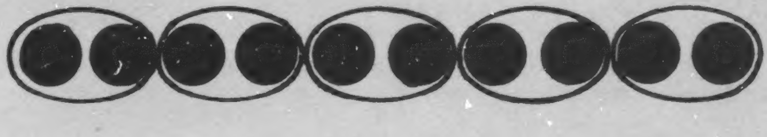
2.05.02 DIVISION FACTS FOR TWOS THROUGH 10

(1-2 lessons)

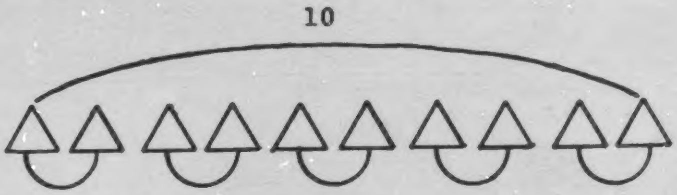
PERFORMANCE OBJECTIVES

The student will be able to...

2.05.02.01A separate up to 10 objects into groups of two without a remainder;
e.g.,



2.05.02.02A identify the number for a given group through 10, and tell how many groups of two are in that larger group;
e.g.,



5 groups of 2

2.05.02.03B solve story problems related to skills learned in this module.
e.g.,

There are 8 apples in a basket. Sara puts 2 apples on each napkin. How many napkins does she need?

$8 \div 2 = 4$ napkins

2.05.02

VOCABULARY

TERMS

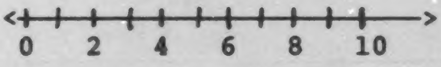
separate

GETTING STARTED

Draw a clothesline with five pairs of socks on the chalkboard. Say, "How many pairs of socks are there? How many socks are there altogether?" Point to each pair and ask the students to count by twos, e.g., 2, 4, 6... 10.

Repeat this procedure with pairs of gloves.

Draw or display a number line on the chalkboard.
e.g.,



Prepare an oak tag frog backed with tape. Place the frog on 0 and say, "This is Freddy the Frog. Freddy loves to jump and catch bugs. Let's jump with Freddy." Move the frog along the number line and count 1, 2, 3... 10 bugs. Place the frog back on 0 and say, "Freddy is going to jump. With each jump Freddy will catch two bugs." Place the frog on 2 on the number line and say, "How many jumps did Freddy make? (1) How many bugs did Freddy catch?" (2) Place the frog on 4 and say, "How many jumps did Freddy make? (2) How many bugs did Freddy catch?" (4) Repeat this procedure through five jumps.

2.05.02

2.05.02.01 **separate up to 10 objects into groups of two without a remainder**

STRATEGY 1: Prepare ten apple cutouts and five basket cutouts for the flannel board. Place the five baskets on the bottom of the flannelboard. Place six apple cutouts on the flannelboard. Say, "I have six apples. I want to put two apples in each basket. How many baskets will I use?" Place two apples in the first basket. Say, "How many baskets did I fill? How many apples are left?" Fill the other baskets while asking the same questions. Say, "How many groups of two did we make?" (3) Repeat this procedure for eight and ten apples.

STRATEGY 2: Distribute an egg carton and 10 counters to each student. Say, "Place two counters in each of four compartments of your egg carton. How many counters are in the egg carton? (8) How many groups of two?" (4) Repeat this activity for six, eight, and ten counters.

2.05.02.02 **identify the number for a given group through 10, and tell how many groups of two are in that larger group**

STRATEGY 1: Prepare and display apple cutouts on a flannel board. Show six apples and then separate them into groups of two. Say, "How many apples are there in all? (6) How many groups of two?" (3)

Repeat this procedure with 2, 4, 8 and 10 apple cutouts.

STRATEGY 2: Distribute pegboards and ten pegs to each student. Say, "Take six pegs and place them in rows with two

STRATEGY 2: cont'd

pegs in each row. How many rows?" (3)

Write the following on the chalkboard.

6 in all ••
2 in each row ••
3 rows ••

Say, "Take eight pegs and place them in rows with two pegs in each row. How many rows?" (4 rows)

Write the following on the chalkboard.

••
8 pegs ••
2 in each row ••
4 rows ••

Repeat this procedure using ten pegs.

2.05.02.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Prepare 20 cookies and 20 paper plates. Say, "Mrs. Blue was a baker. She liked to give cookies to all the youngsters in the neighborhood. Today she has eight cookies and wants to give two cookies to each youngster. How many youngsters can she treat?"

Ask a student to take eight cookies and place two cookies on each paper plate. Say, "How many paper plates are filled?" (4)

Repeat this procedure with other problems.

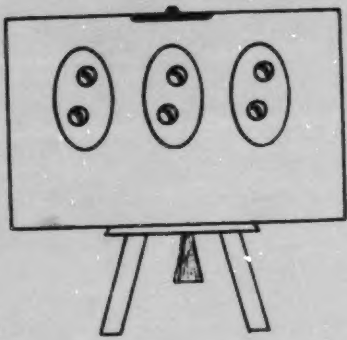
STRATEGY 2: Distribute egg cartons and buttons to each student. Say, "Tom has ten buttons. He is going to give two buttons to each person he sees. To how many people can he give buttons? Place two buttons in each section of your egg carton until you have used all of your buttons. To how many people can Tom give his buttons?" (5)

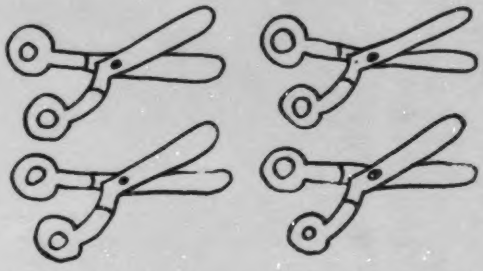
Repeat this procedure using other problems.

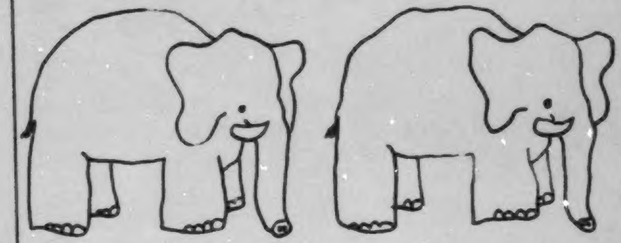
P.O. 2.05.02.01

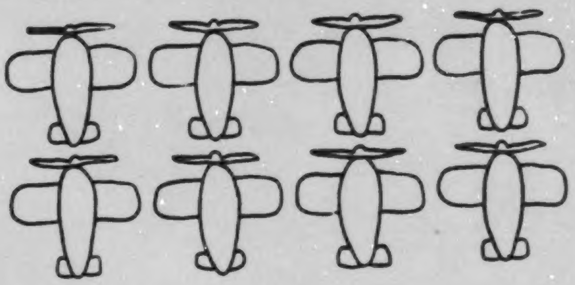
NAME: ______________________ CLASS: __________ DATE: ________

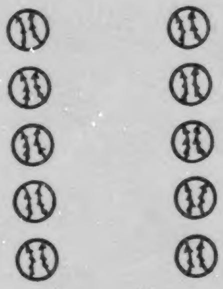
Circle groups of 2.

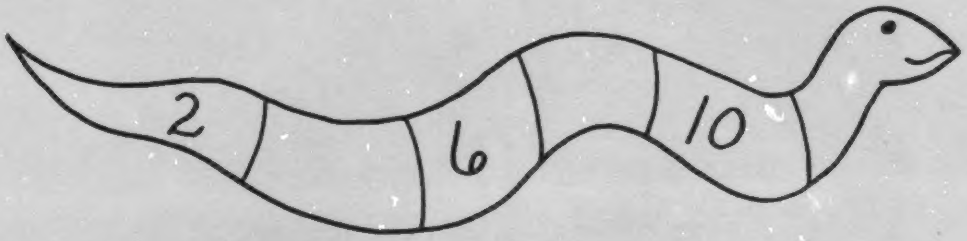








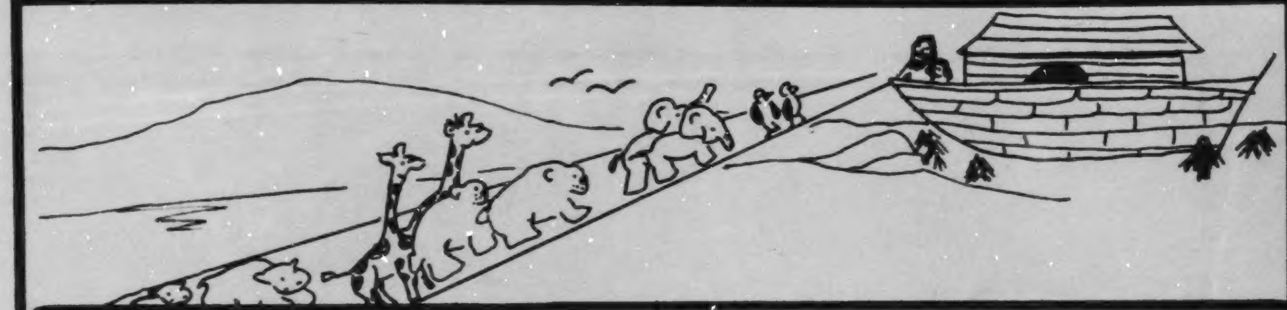




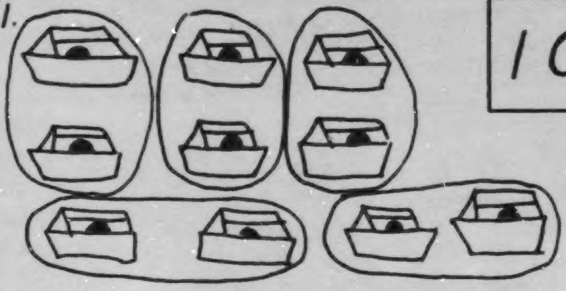
P.O. 2.05.02.02

NAME:__________________________________CLASS:_________DATE:_______

Write the number of objects. Circle groups of two and fill in the box.



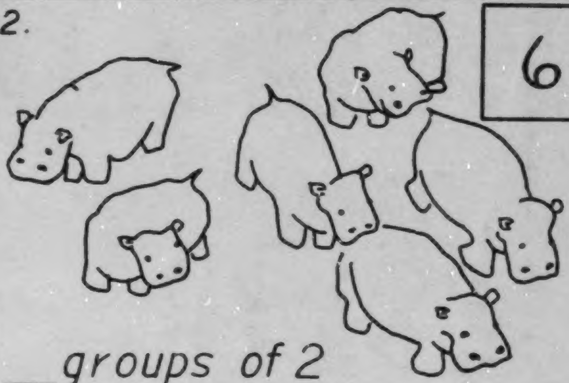
1.



10

5 groups of 2

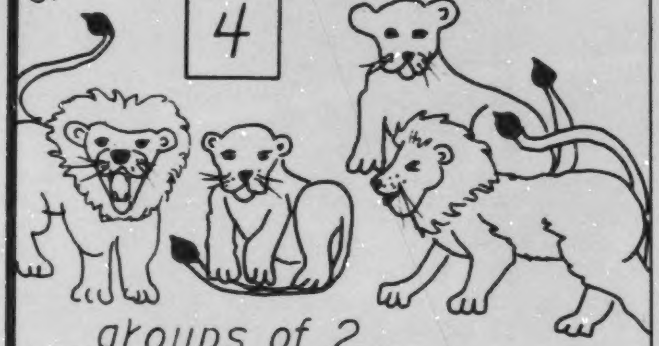
2.



6

__groups of 2

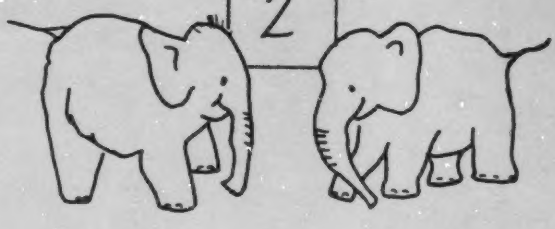
3.



4

__groups of 2

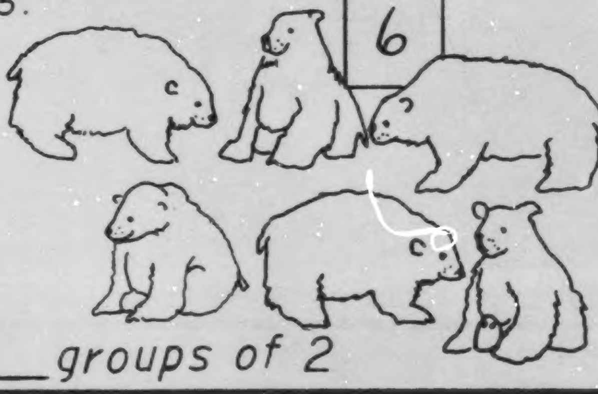
4.



2

__group of 2

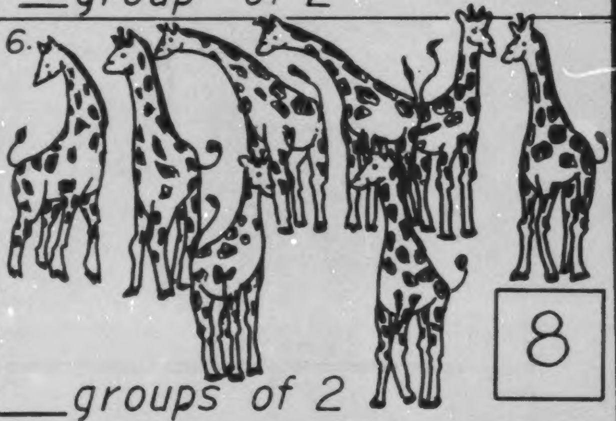
5.



6

__groups of 2

6.



8

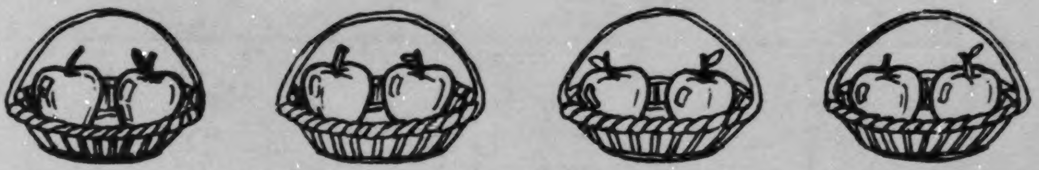
__groups of 2

P.O. 2.05.02.03

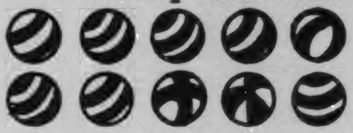
NAME:______________________________ CLASS:_________ DATE:________

Draw a picture to show each grouping. Write the number of groups in the box.

John has 8 apples.
He put 2 apples in each basket.
How many baskets did he need?

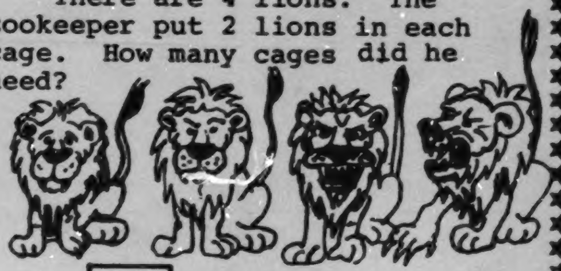


1) There are 10 balls. I want to put 2 balls in each box. How many boxes do I need?



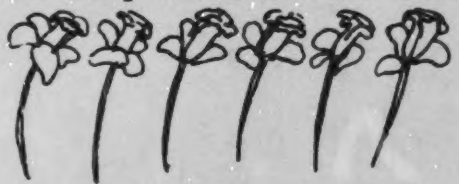
☐ Groups

2) There are 4 lions. The zookeeper put 2 lions in each cage. How many cages did he need?



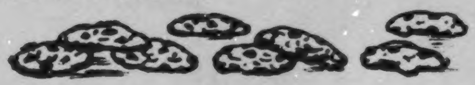
☐ Groups

3) Maria has 6 flowers. She put 2 flowers in each vase. How many vases did she need?



☐ Groups

4) Mrs. Jones has 8 chocolate chip cookies. She put 2 cookies on each plate. How many plates does she have?



☐ Groups

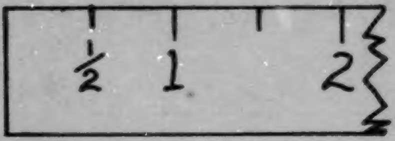
2.10.09 LINEAR MEASUREMENT - HALF INCH

(1 lesson)

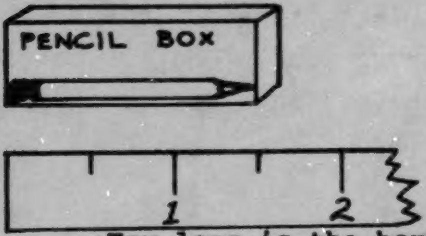
PERFORMANCE OBJECTIVES

The student will be able to...

2.10.09.01C identify $\frac{1}{2}$ inch on the 12 inch ruler; e.g.,



2.10.09.02C measure and record length of objects to the nearest $\frac{1}{2}$ inch; e.g.,



How long is the box?

Note: Objects to be measured should not exceed 12 inches.

2.10.09.03C measure and record lengths of line segments to the nearest $\frac{1}{2}$ inch. e.g.,

How long is the line segment?

2.10.09

VOCABULARY

TERMS	SYMBOLS
one half inch	$\frac{1}{2}$"

GETTING STARTED

Prepare and distribute one inch graph paper. Say, "Color one box. This box measures one inch. Color another space next to the first. How much do these two spaces measure? (2 inches) Color five boxes. How many inches do these five boxes measure? Trace a pencil or a crayon on the graph paper and estimate its length to the nearest inch."

Prepare and distribute a set of rulers calibrated in inches. Say, "An inch is a common unit of measure. These rulers are marked in inches. Put a finger from your left hand on the left end of your ruler and a finger from your right hand on the line with the number one. The distance between your fingers is one inch. Keep your left finger on the same place and put your right finger on the number four. What is the distance between your fingers?" Ask the students to use their rulers to measure their notebooks, pencils,...

2.10.09

2.10.09.01 **identify $\frac{1}{2}$ inch on the 12 inch ruler**

STRATEGY 1: Prepare and distribute twelve inch rulers marked in $\frac{1}{2}$ inches. Say, "The ruler is a tool we use when we want to measure something. Today we are using 12 inch rulers." Allow the students time to examine their rulers. Say, "Place one finger on the three and one finger on the four. How long is the space between your fingers? (1 inch) Look at the marking between the three and the four on the ruler. If the space between three and four measures one inch, what do you think the mark between the three and four measures? (a half inch) The line between three and four names $3\frac{1}{2}$ inches." Repeat this procedure with other half inch markings.

STRATEGY 2: Prepare and display a diagram of a large ruler having 12 inches and $\frac{1}{2}$ inch markings. Say, "What kind of ruler is shown? What do the whole numbers on the ruler tell us?" (The number of inches.) Point to the markings between the zero and one on the ruler diagram. Say, "What do you think this marking measures?" ($\frac{1}{2}$") Ask the students to count off $\frac{1}{2}$", 1", $1\frac{1}{2}$", 2", $2\frac{1}{2}$"... 12".

2.10.09.02 **measure and record length of objects to the nearest $\frac{1}{2}$ inch**

STRATEGY 1: Prepare and distribute 12 inch rulers with $\frac{1}{2}$ inch markings and pre-cut strips of paper in various $\frac{1}{2}$

STRATEGY 1: cont'd

inch lengths, e.g., $1\frac{1}{2}''$, $2\frac{1}{2}''$ ... $11\frac{1}{2}''$. Distribute strips of different lengths to each student. Mark the strips so that each student will work with the same strip.

Say, "Take the strip marked with an A and place it on the ruler making sure the left end of both the paper and the ruler line up at zero. How long is this strip? Write the measurement of this strip in your notebook." Measure another strip with the class and then ask them to measure and record the length of the remaining strips.

STRATEGY 2: Prepare and distribute a $3\frac{3}{8}''$ piece of ribbon. Say, "Place the end of your ribbon on the left end of the ruler and smooth it along the ruler. Where does it end? Is it closer to 3 inches or $3\frac{1}{2}$ inches?" Write $3\frac{1}{2}''$ on the chalkboard. Repeat this procedure with a ribbon that is $3\frac{7}{8}''$. Distribute other lengths of ribbon. Say, "Measure your ribbon and write your measurements in your notebook."

2.10.09.03 **measure and record lengths of line segments to the nearest $\frac{1}{2}$ inch**

STRATEGY 1: Distribute 12 inch rulers with $\frac{1}{2}$ inch markings and a prepared sheet of line segments ruled to exact half inch sizes in random order. Make $\overline{AB} = 3\frac{1}{2}''$, $\overline{CD} = 5\frac{1}{2}''$, $\overline{EF} = 7\frac{1}{2}''$, $\overline{GH} = 2\frac{1}{2}''$... Say, "Measure the first line segment from end to end and write the measurement next to the line segment on your paper."

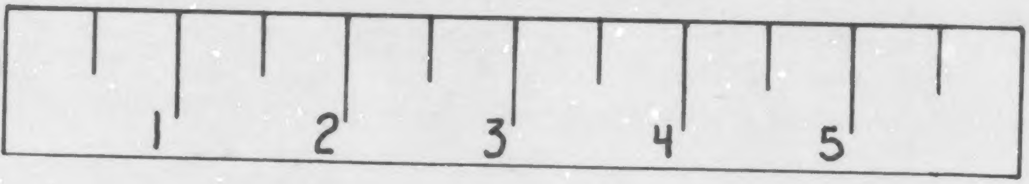
Repeat this procedure for all the line segments on the sheet.

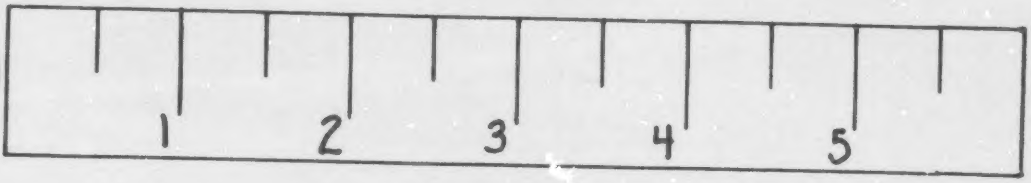
STRATEGY 2: Prepare and distribute rulers marked in half inches and a paper with a line segment measuring $2\frac{3}{8}$" to each student. Say, "Measure your line segment. Is the line segment the exact length of a whole inch? Between which inch markings does the line segment end? (2" and 3") What $\frac{1}{2}$" mark is it near? ($2\frac{1}{2}$") We can say that the line segment measures nearest to $2\frac{1}{2}$ inches." Distribute a paper with other line segments with various lengths through 12 inches. Ask the students to measure the line segments and record the measurements to the nearest half inch.

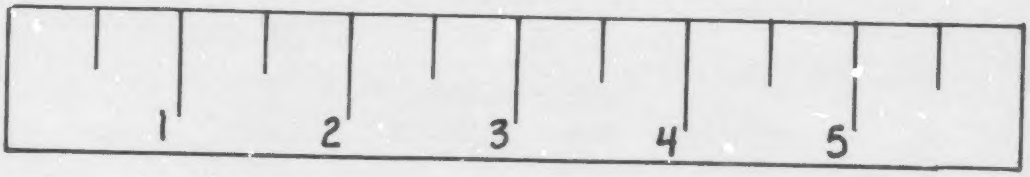
P.O. 2.10.09.01

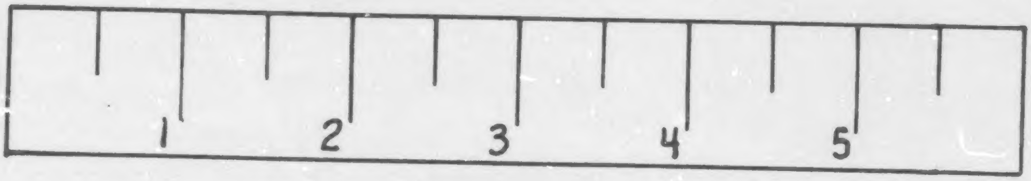
NAME: ______________________ CLASS: __________ DATE: ________

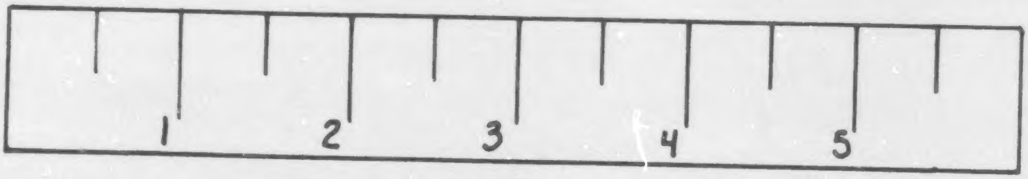
Cut out the butterflies at the bottom of the page.
Paste a butterfly on each measurement named at the end of the ruler.

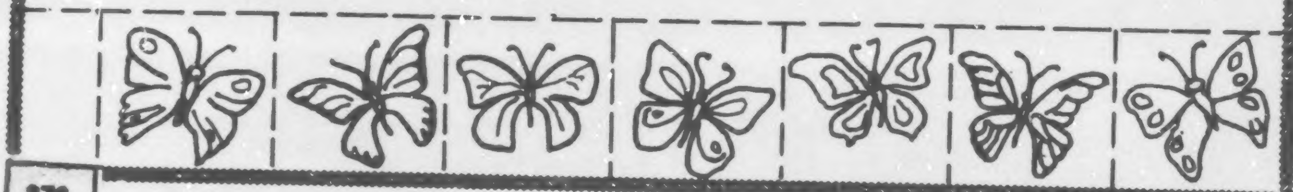
1)  $4\frac{1}{2}$ in.

2)  $2\frac{1}{2}$ in.

3)  $1\frac{1}{2}$ in.

4)  $5\frac{1}{2}$ in.

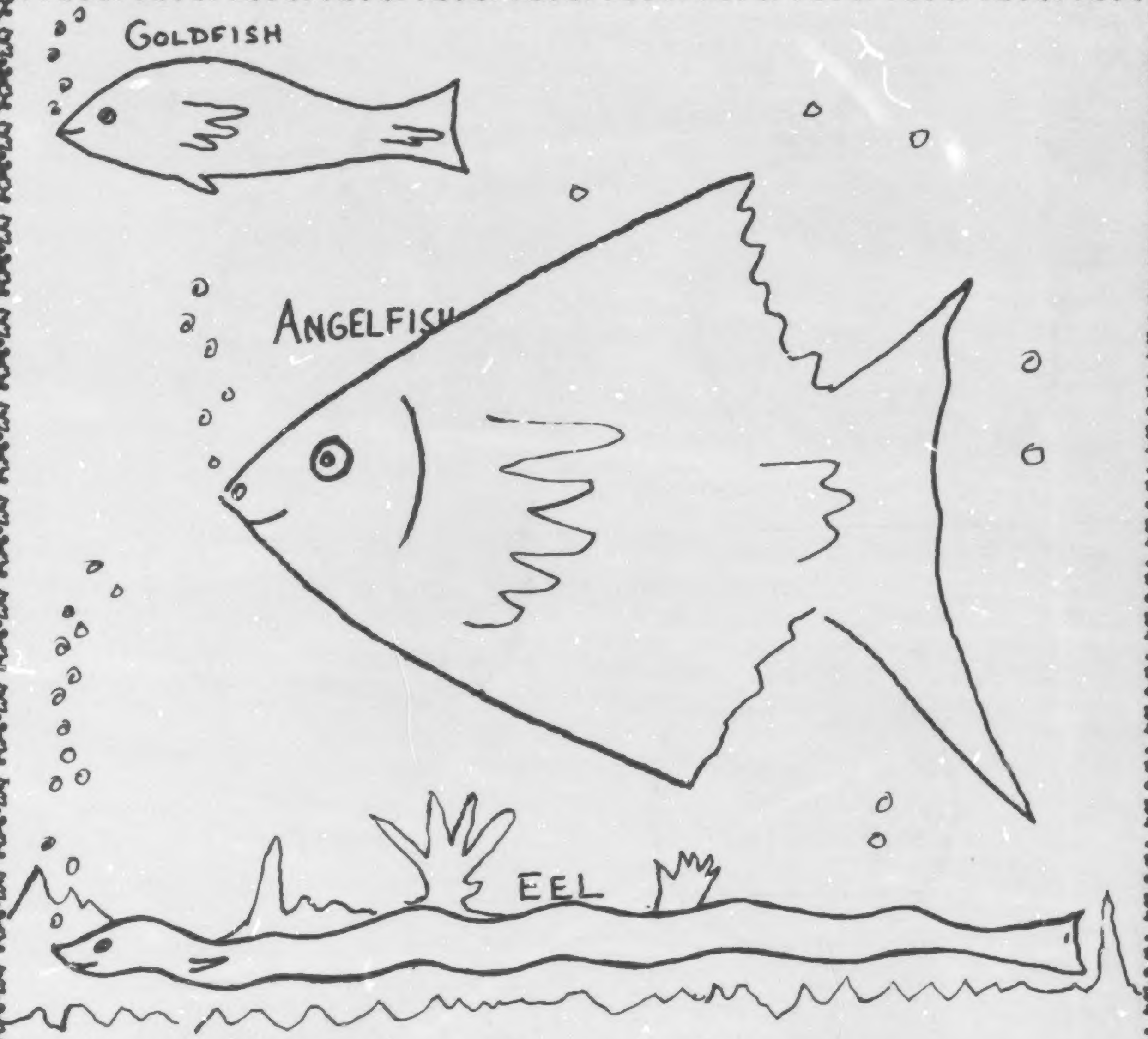
5)  $3\frac{1}{2}$ in.



P.O. 2.10.09.02

NAME:______________________________ CLASS:__________ DATE:________

Measure each fish and record it's length next to its name on the chart.

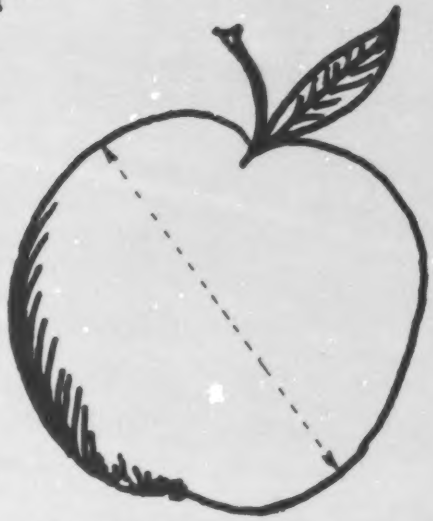

GOLDFISH
ANGELFISH
EEL

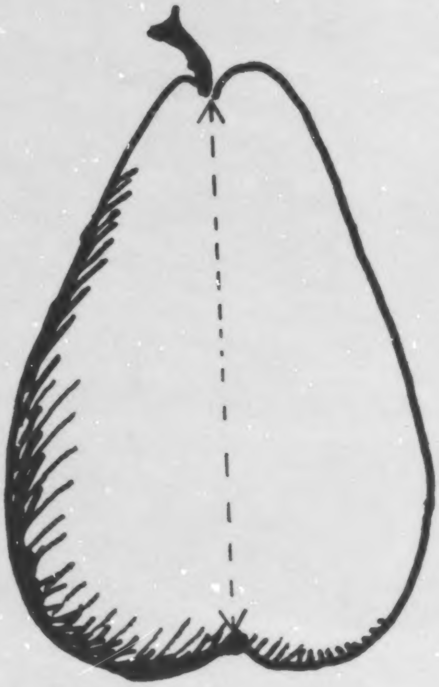
TROPICAL FISH	LENGTH TO ½ INCH
GOLDFISH	______ INCHES
ANGELFISH	______ INCHES
EEL	______ INCHES

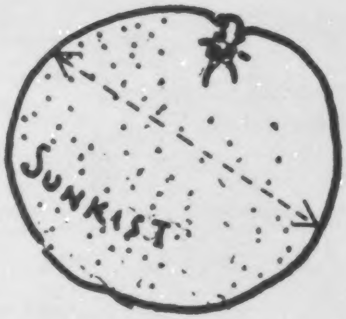
P.O. 2.10.09.03

NAME: ______________________ CLASS: __________ DATE: __________

Measure each piece of fruit to the nearest $\frac{1}{2}$ inch and record its measurement on the chart.







FRUIT	TO NEAREST ½ IN
APPLE	
PEAR	
ORANGE	

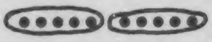
2.04.02 MULTIPLICATION FACTS FOR FIVES THROUGH 25

(1-2 lessons)

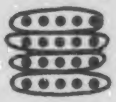
PERFORMANCE OBJECTIVES

The student will be able to...

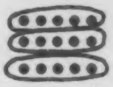
2.04.02.01A count by fives;
e.g.,

1 group of five (5)
2 groups of five (10) 

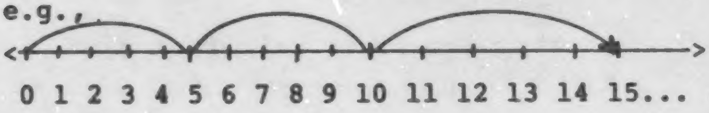
2.04.02.02B show groups of five;
e.g.,

4 groups of five =  = 4 x 5

2.04.02.03A demonstrate that multiplication is the process of repeated addition of like addends;
e.g.,

5 + 5 + 5 =  = 3 x 5

2.04.02.04A use a number line to demonstrate counting by fives.
e.g.,



1 five = 5
2 fives = 10
3 fives = 15

2.04.02

VOCABULARY

TERMS

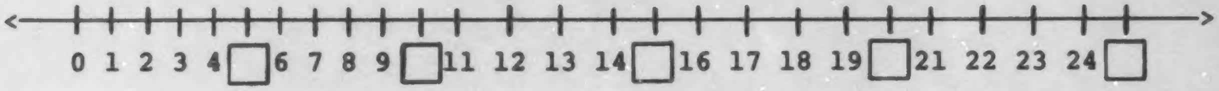
multiplication
product

GETTING STARTED

Prepare and display a hundreds chart and at least 15 oak tag nickels backed with tape. Distribute a copy of the hundreds chart to each student. Say, "We are going to count money." Hold up one nickel. Say, "Who can tell us how much this equals? (5 cents) Who can find the number that equals one nickel on our chart?" Tape one nickel to the number five and ask each student to circle the number five on his/her chart. Hold up two nickels and say, "What do these equal? Which number on the chart equals two nickels?" Tape the two nickels to the number ten and ask the students to circle the number ten on their chart. Repeat this procedure through five nickels. Ask the students to count by fives through 25.

Prepare a 0 through 25 number line leaving blank spaces for the numbers 5, 10, 15, 20 and 25. Ask the students to read the numbers on the number line. Place five magnetic discs on the chalkboard or draw five circles, and say, "How many circles are there? Who can write the number 5 on the number line?" Repeat this procedure with 10, 15, 20 and 25 circles. When the number line has been completed, ask the students to read all of the numbers.

e.g.,



2.04.02

2.04.02.01 count by fives

STRATEGY 1: Prepare 25 discs and display them on the chalkboard. Ask several students to arrange the discs in groups of five. Ask a student to count the number of discs in each group. Ask another student to count by groups of five. Repeat this procedure several times.

STRATEGY 2: Prepare and arrange ten flashcards showing groups of five circles through 5 fives. Ask a student to use the flashcards to count by fives. Repeat this procedure until several students have had an opportunity to count.

2.04.02.02 show groups of five

STRATEGY 1: Prepare and distribute 25 counters to each student. Say, "Make one group of five with your counters." Write 1 five (●●●●●) = 5 on the chalkboard. Say, "Use your counters to make 2 groups of five. How many counters did you use?" Write ☐ fives (●●●●●) (●●●●●) = 10 on the chalkboard. Say, "Who can write the correct number of fives in the blank space?" Repeat this procedure through 5 fives.

STRATEGY 2: Ask a student to hold five objects, e.g., pencils. Say, "How many students do you see? How many pencils does this student have?" Write on the chalkboard: ☐ five (●●●●●). Say, "Who can write the correct number of fives in the blank space?" Ask two other students to hold five objects each. Say,

2.04.02

STRATEGY 2: cont'd

"How many students do you see? How many pencils do they each have?" Write □ fives (●●●●●)(●●●●●) on the chalkboard. Ask a student to write the correct number of fives in the blank space. Repeat this procedure through 5 fives.

2.04.02.03 **demonstrate that multiplication is the process of repeated addition of like addends**

STRATEGY 1: Prepare and display ten flannel cutouts into 2 groups of five on a flannel board. Say, "How many groups do you see? How many objects are in each group?" Write the following examples on the chalkboard: 5 + 5 = □ , 2 x 5 = □ .

Say, "Who can write the correct sum in the first frame? Who can write the correct product in the second frame? We see that 5 + 5 and 2 x 5 have the same answer." Ask a student to arrrange fifteen felt pieces into 3 groups of five. Repeat this procedure through 5 + 5 + 5 + 5 + 5 = 25 and 5 x 5 = 25.

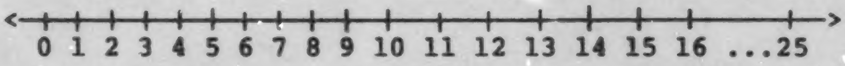
STRATEGY 2: Distribute 25 counting cubes to each student. Group the students if a sufficient number of cubes are not available. Say, "Make one group with five cubes. Make another group of five cubes. How many groups did you make? How many cubes are in each group?" Write the following on the chalkboard and say, "We can say that 2 groups of five is the same as 5 + 5 = □ or 2 x 5 = □ ." Ask a student to write the correct sum and product in each frame. Repeat this procedure through 5 groups of five cubes.

2.04.02

2.04.02.04 use a number line to demonstrate counting by fives

STRATEGY 1: Prepare and distribute a 0 through 25 number line to each student. Draw a completed number line on the chalkboard.

e.g.,

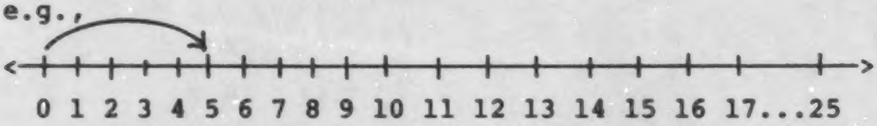


Say, "We are going to see how far we can jump." Draw one jump of five on the number line. Say, "Who can tell us how many times we jumped? How far did we get?"

Write 1 five = 5 on the chalkboard. Draw two jumps of five on the number line. Say, "How many times did we jump? (2) How far did we get?" (10) Write 2 fives = 10. Repeat this activity through 5 fives = 25. Ask the students to show these jumps on their number lines.

STRATEGY 2: Draw a 0 through 25 number line on the chalkboard. Prepare 25 oak tag pennies and 5 nickels backed with tape. Place one penny under each number on the number line. Say, "Paul opened his piggy bank. He found 25 pennies. Paul decided to go to the bank to see how many nickels he could get for his pennies. He counted out five pennies." Point to the number line and ask the students to count the pennies together.

e.g.,

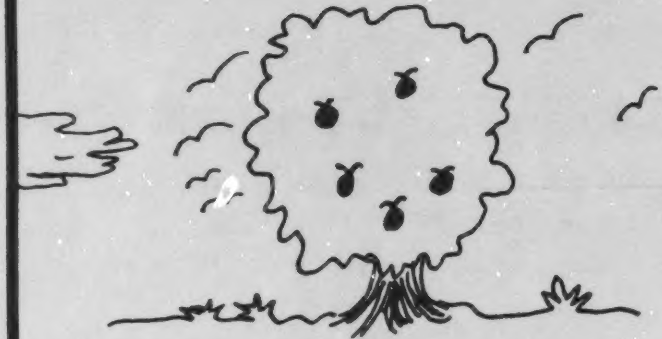


Say, "How many nickels did Paul get for the five pennies?" Place the nickel on the number line. Repeat this procedure through 5 groups of five pennies.

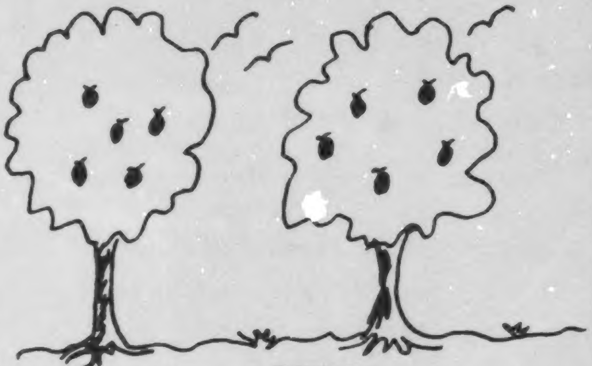
P.O. 2.04.02.01

NAME: ______________________ CLASS: __________ DATE: __________

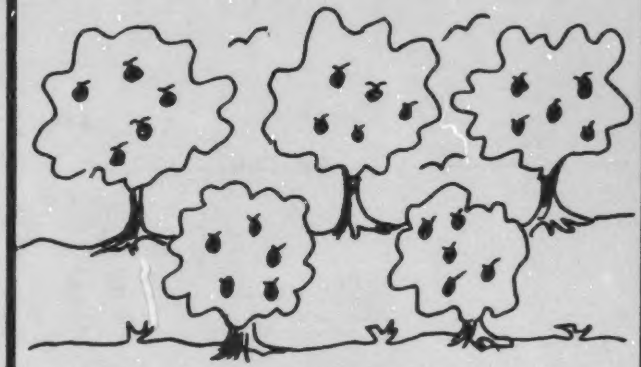
Count the fruits in the trees.



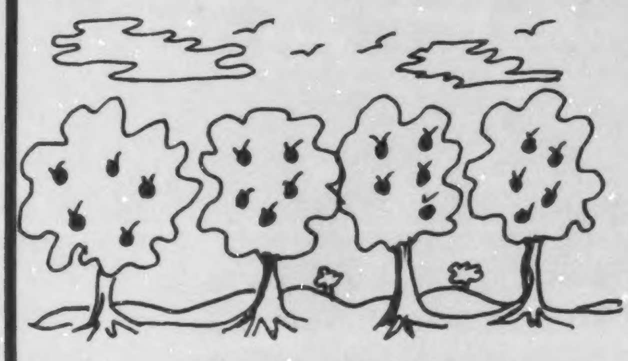
1 FIVE = 5



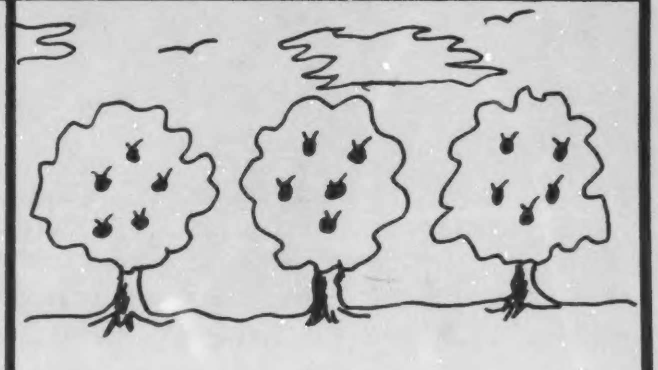
2 FIVES = ____



5 FIVES = ____



4 FIVES = ____

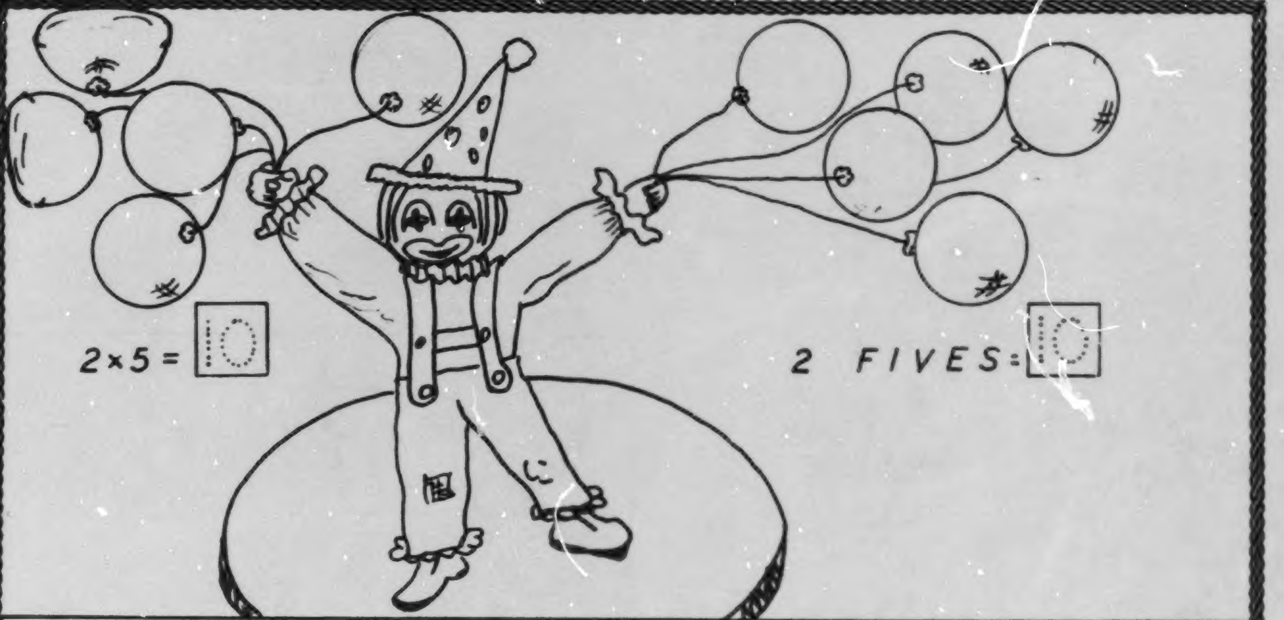


3 FIVES = ____

P.O. 2.04.02.02

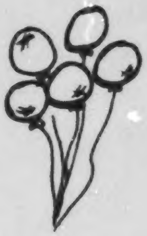
NAME: ______________________ **CLASS:** __________ **DATE:** ________

Count the number of balloons.



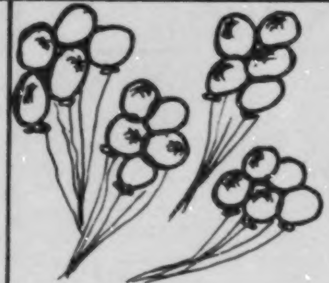
2×5 = 10

2 FIVES: 10



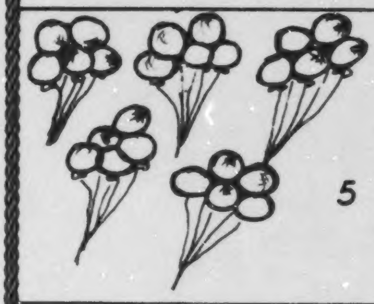
1 × 5 = ☐

1 five = ☐



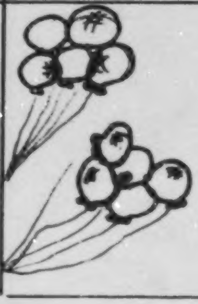
4 × 5 = ☐

4 fives = ☐



5 × 5 = ☐

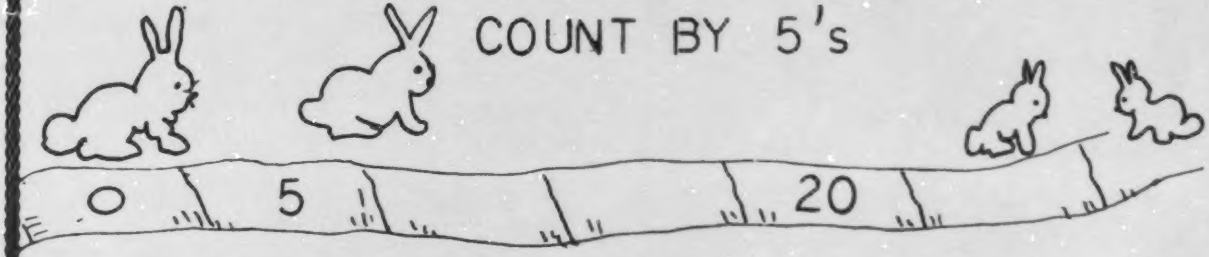
5 fives = ☐



2 × 5 = ☐

2 fives = ☐

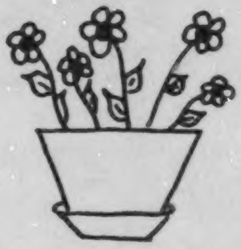
COUNT BY 5's



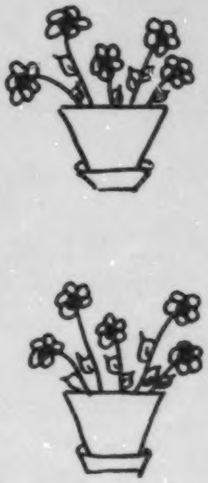
P.O. 2.04.02.03

NAME: ______________________ CLASS: ________ DATE: ________

How many flowers are in the flower pots?

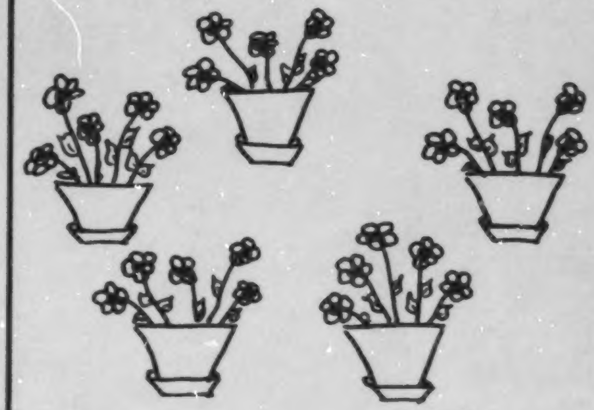


$1 \times 5 = \boxed{5}$



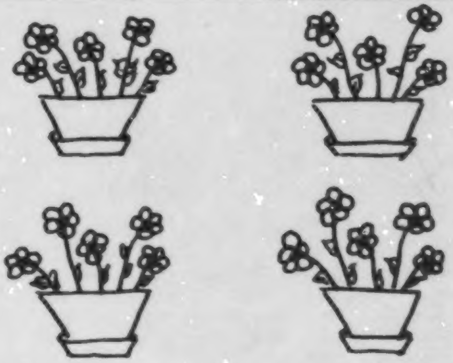
5+5+5 = ☐

3×5 = ☐



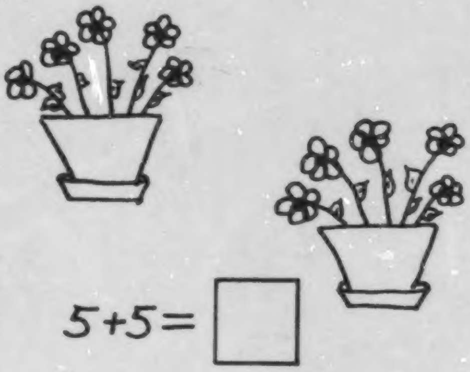
5+5+5+5+5 = ☐

5×5 = ☐



5+5+5+5 = ☐

4×5 = ☐



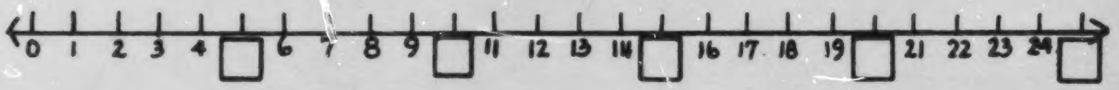
5+5 = ☐

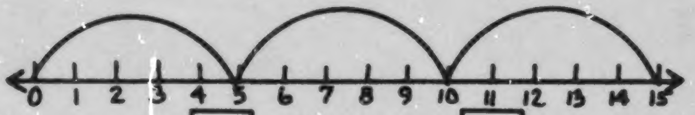
2×5 = ☐

P.O. 2.04.02.04

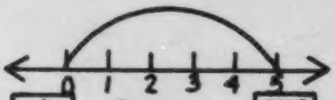
NAME: ______________________ CLASS: ________ DATE: ________

Can you count by fives?

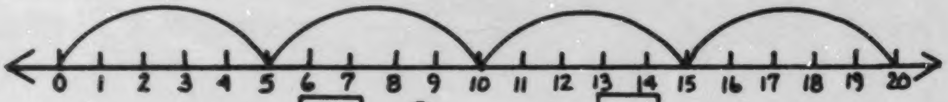

0 1 2 3 4 ☐ 6 7 8 9 ☐ 11 12 13 14 ☐ 16 17 18 19 ☐ 21 22 23 24 ☐


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

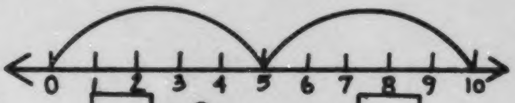
☐ fives = ☐



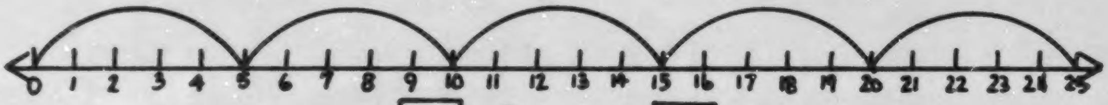
1 five = 5


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

☐ fives = ☐


0 1 2 3 4 5 6 7 8 9 10

☐ fives = ☐


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

☐ fives = ☐

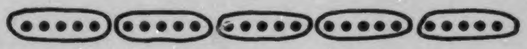
2.05.03 DIVISION FACTS FOR FIVES THROUGH 25

(1-2 lessons)

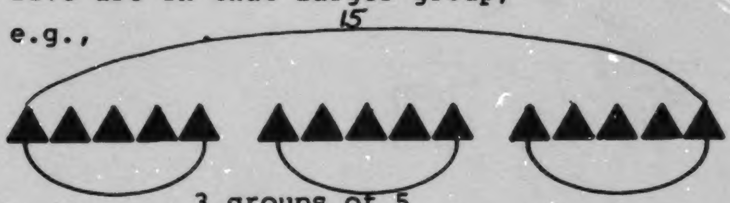
PERFORMANCE OBJECTIVES

The student will be able to...

2.05.03.01A separate up to 25 objects into groups of five, without a remainder;
e.g.,



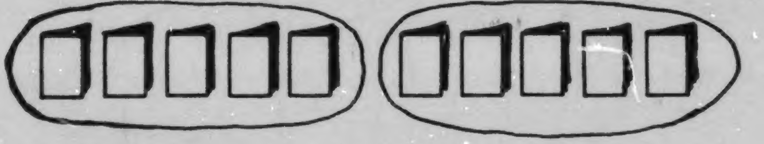
2.05.03.02A identify the number for a given group through 25 and tell how many groups of five are in that larger group;
e.g.,



3 groups of 5

2.05.03.03A solve story problems related to skills learned in this module.
e.g.,

The teacher has ten comic books to give out. If each pupil gets five comic books, how many pupils could receive comic books?



VOCABULARY

TERMS	SYMBOLS
divide separate	÷

GETTING STARTED

Prepare and distribute 25 counters and a paper with five large circles on it to each student. Say, "Place 5 counters into each of three circles. How many counters did you use? Count the counters by 5, e.g., 5, 10, 15." Write 5 + 5 + 5 = 15 on the chalkboard. Say, "Let's write this as a multiplication sentence. How many groups are there? (3) How many in each group?" (5) Write 3 x 5 = 15 on the chalkboard. Repeat this procedure through 5 fives.

Ask five students to come to the front of the room. Ask the first student to hold up five fingers. Count the fingers. Ask the second student to hold up one hand. Ask several students to hold up one hand and continue counting through 25. Ask each student to put down their hand one at a time. Count by five backwards, e.g., 25, 20, 15, 10, 5, 0.

2.05.03

2.05.03.01 **separate up to 25 objects into groups of five, without a remainder**

STRATEGY 1: Prepare and display 25 magnetic discs and distribute 25 counters to each student. Say, "25 youngsters are going to a party. Mrs. Brown is going to put five youngsters at each table. How many tables will she need? These 25 discs will represent the youngsters. How can we find out how many tables Mrs. Brown will need?" Place a group of five discs at one table. Place another group of five discs at another table. Say, "How many tables do we have now?" (2) Continue until all of the discs are used while the students do the same with their counters. Say, "How many tables will we need?" (5)

Repeat this procedure separating 5, 10, 15 and 20 counters into groups of 5.

STRATEGY 2: Prepare and distribute 25 counters to each student. Say, "Separate your counters into groups of 5. Remove 5 counters at a time."

Repeat this procedure separating 20, 15, 10 and 5 counters into groups of 5.

2.05.03.02 **identify the number for a given group through 25 and tell how many groups of five are in that larger group**

STRATEGY 1: Prepare and distribute one bundle of 25 sticks or straws to each student. Say, "Count your sticks. Separate the sticks into groups of five. How many

STRATEGY 1: cont'd

groups do you have?" Remove one group at a time until there are no groups left. Say, "How many sticks did we begin with? How many sticks did we remove each time? How many groups of sticks did we remove?" Repeat this procedure with 20 sticks in four piles, 15 sticks in three piles...

STRATEGY 2:

Ask 25 students to come to the front of the room. Divide them into groups of five. Ask the remaining students to count the total number of students and the number in one group. Ask one group of students to sit. Say, "How many students are left? (20) How many students sat?" (5) Repeat this procedure with the other groups, one group at a time, until all of the students are seated. Say, "How many boys and girls were at the front of the room? (25) How many students sat each time? (5) How many groups of students sat?" (5 groups)

Repeat this procedure using 4 groups, 3 groups, 2 groups and 1 group.

2.05.03.03 **solve story problems related to the skills learned in this module**

STRATEGY 1:

Tape twenty unit pieces of squared material to the chalkboard. Write the following word problem on the chalkboard.

> There are 20 pieces of cheese which
> must be shared among five students.
> How many pieces will each student
> receive?

Ask a student to read the problem. Say, "We are going to act out this problem. The 20 squares

STRATEGY 2: cont'd

represent the 20 pieces of cheese. Each student must receive an equal amount." Select five students to share the pieces. Ask each student to take a square, one square at a time, until all of the squares are used. Say, "How many squares does each student have? How many pieces of cheese did they share? How many students shared the cheese? How many pieces of cheese did each student get?"

STRATEGY 2:

Write the following word problem on the chalkboard.

> There are 25 crayons in a box. If they
> are shared by five students, how many
> crayons will each student receive?

Divide the class into groups of five. Distribute a box of 25 crayons (use colored strips of paper if crayons are not available) to each group.

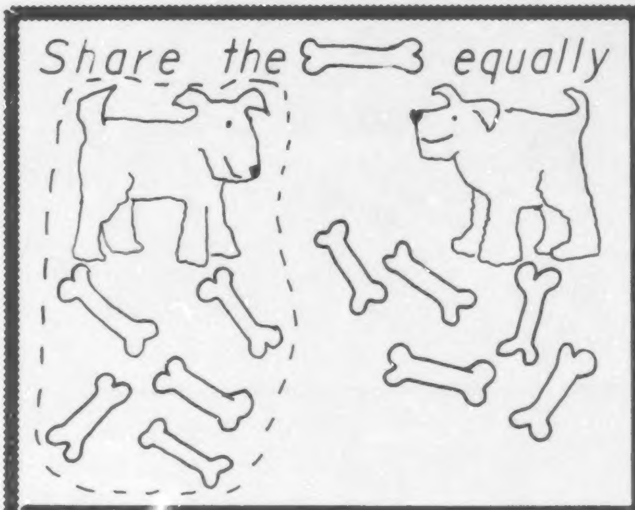
Say, "You are to share the crayons equally." Allow each group to share the crayons as they wish. After the crayons have been shared say, "How many crayons does each person have? (5) How many crayons does each group have? (25) How many students shared the box of 25 crayons?"

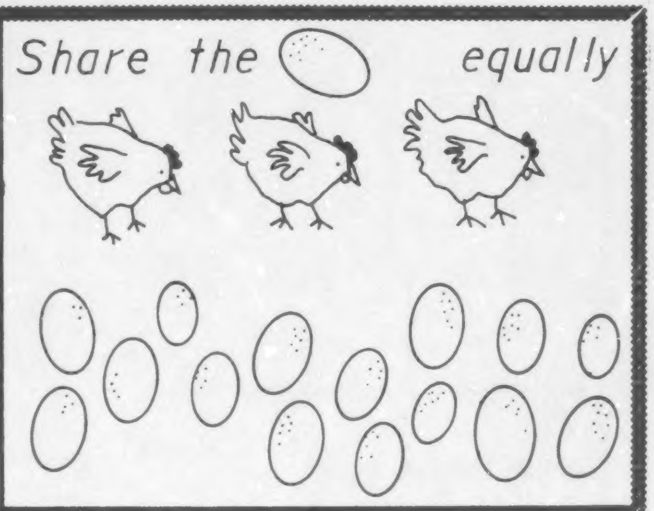
Repeat this procedure using other story problems.

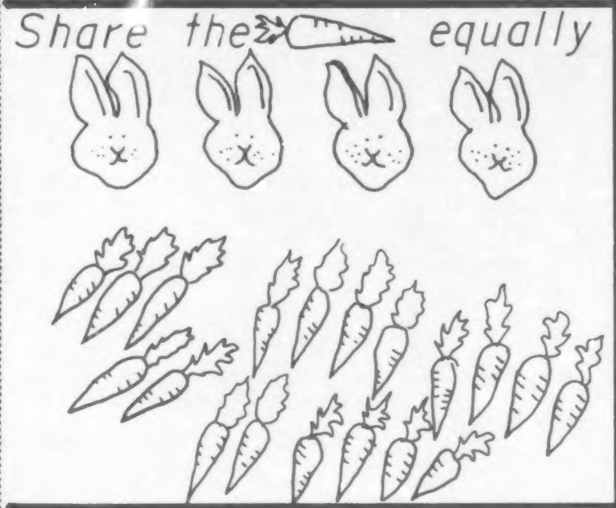
P.O. 2.05.03.01

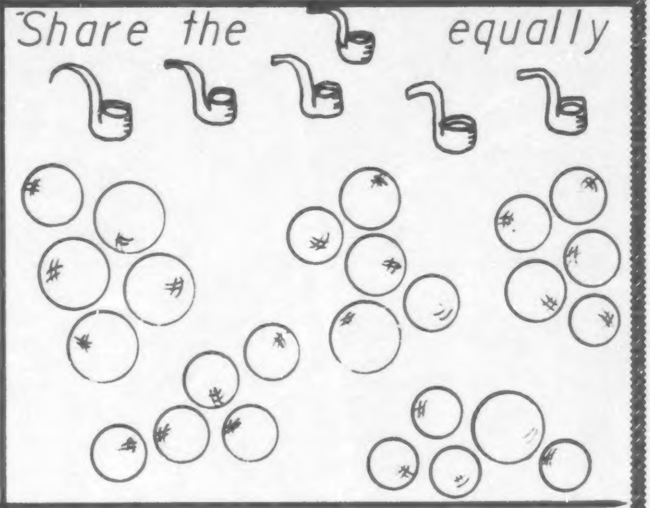
NAME: ______________________ CLASS: __________ DATE: ________

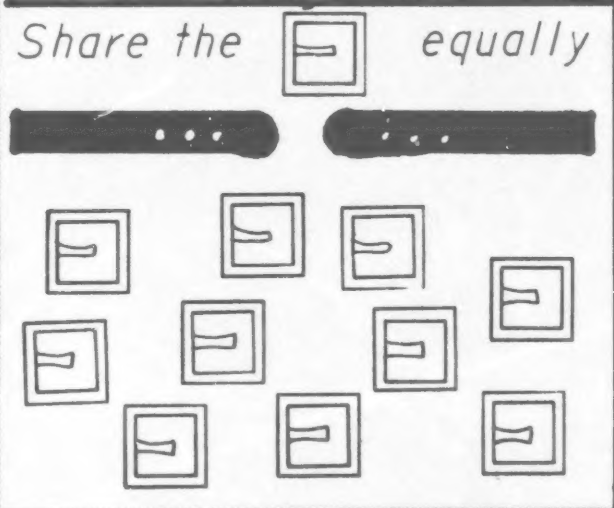
Separate the objects in each box into equal groups.

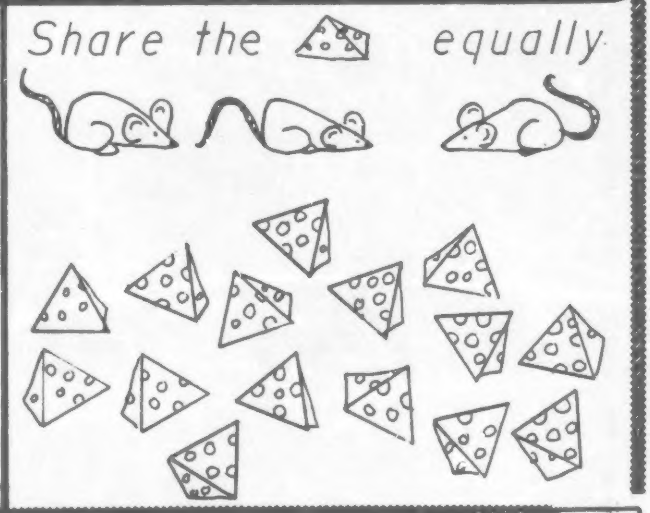

Share the equally


Share the equally


Share the equally


Share the equally

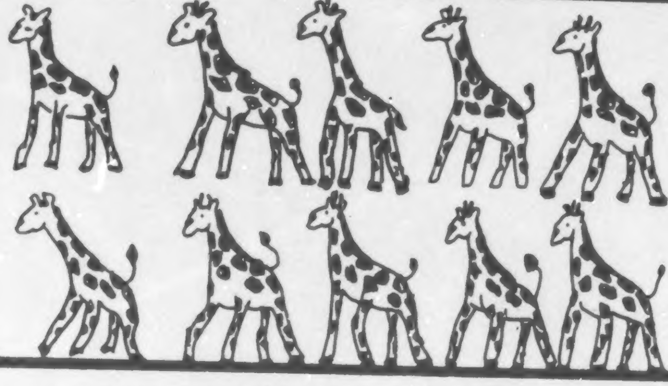

Share the equally


Share the equally

P.O. 2.05.03.02

NAME: ______________________ CLASS: __________ DATE: __________

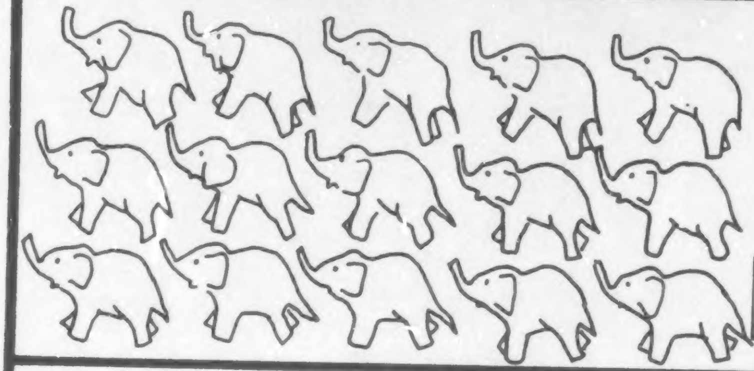
Circle each group of 5. Write the number of rows.



10 in all.

5 in each row.

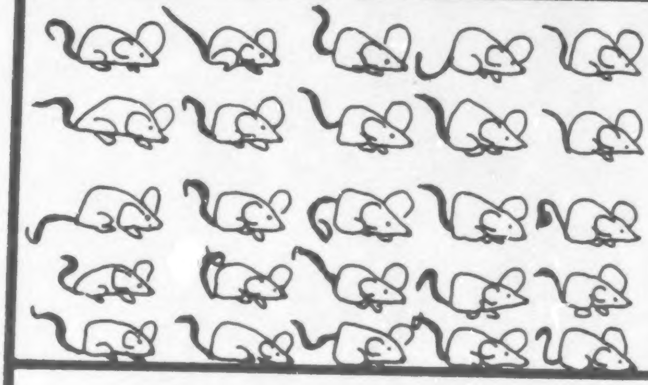
☐ rows.



15 in all.

5 in each row.

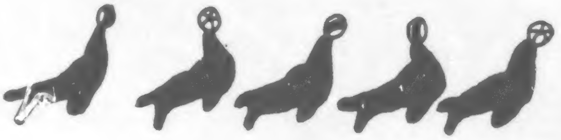
☐ rows.



25 in all.

5 in each row.

☐ rows.



5 in all.

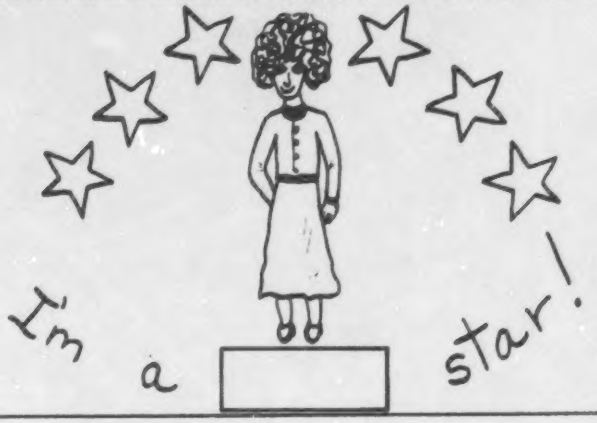
5 in each row.

☐ rows.

P.O. 2.05.03.03

NAME: ______________________ CLASS: ________ DATE: ________

Solve each problem. Write the answer in the square. Write the letter of the problem on the line above the answer at the bottom. See if you can spell the secret word.



U

There are 15 cookies in a jar. 5 girls are going to share the cookies. How many will each girl receive? ☐

R

There are 20 pennies in a bank. 5 boys are going to share the pennies equally. How many will each boy get? ☐

P

The Smith family walked 5 miles in 5 days. How many miles did they walk each day? ☐

E

John has 12 toy trucks. He is going to share them equally with his 4 friends. How many trucks will each friend get? ☐

S

There are 25 bones. If 5 dogs are going to share the bones equally, how many bones will each dog get? ☐

____ ____ ____ ____ ____

5 3 1 2 4

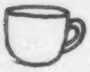
2.10.10 CUP, PINT, QUART

(1-2 lessons)

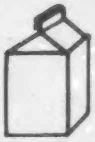
PERFORMANCE OBJECTIVES

The student will be able to...

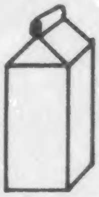
2.10.10.01A identify the relationships among cup, pint and quart;
e.g.,



cup



pint



quart

*2.10.10.02A estimate and measure capacity using different customary units.
e.g.,

2.10.10

VOCABULARY

TERMS

pint
quart
cup

GETTING STARTED

Display standard containers of varying sizes. Ask students to put containers in size order from smallest to largest and largest to smallest.

Arrange a variety of bottles or containers on a table. Say, "Mother is going to bake a cake. The recipe calls for a cup of milk." Ask a student to pour a cup of water into a container. Ask three other students to do the same. Show a jar and a measuring cup. Ask the students to estimate how much liquid the jar will hold. Say, "Let's pour water into the cup and see who came the closest to the correct amount." Compare the estimates to the actual amounts. Say, "Why do we have to know the measurement of a cup?" Elicit answers from several students.

2.10.10

2.10.10.01 **identify the relationships among cup, pint and quart**

STRATEGY 1: Prepare two quart containers, a pint container and a one cup measure. Label all but one quart container and fill that container with water. Hold up the cup and the pint container and identify them. Ask a student to fill the cup with water and pour it into the pint container. Say, "Is the pint container full? How many more cups will fill the pint?" Fill the pint container with another cup of water. Repeat this procedure for the quart using the cup container and then use the pint container. Say, "How many pints filled the quart? How many cups can fill the quart? Two cups filled a pint, two pints filled a quart, so four cups would fill a quart." Ask a student to show that four cups equal one quart. Emphasize that each container is double the size of the next container.

STRATEGY 2: Display and label a one quart container, two pint containers, and four measuring cups. Fill the quart container with water. Say, "How many pint containers can we fill from this quart container?" Fill the pint containers. Say, "How many pints did we fill? (2) How many cups can we fill from this pint container?" Fill the cups. Say, "How many cups did we fill?" Pour the water back into the quart container. Say, "How many cups can we fill from the quart container?" Fill the cups.

Construct this chart on the chalkboard.

e.g.,

1 pint = ________ cup(s)
1 quart = ________ pint(s)
2 pints = ________ quart(s)
1 quart = ________ cup(s)
2 cups = ________ pint(s)
4 cups = ________ quart(s)

2.10.10

2.10.10.02 **estimate and measure capacity using different customary units**

STRATEGY 1: Prepare some cup, pint and quart containers of different shapes and sizes and labels for each. Hold up one of the containers, e.g., quart. Say, "Who can guess how much this container will hold?" Allow the students to guess. Ask a student to fill a cup with water and pour it into the quart container. Say, "Is this container full?" Continue this procedure until the container is full. Say, "How many cups filled this container? (4) Which container holds four cups? (quart) We can say this bottle is a quart bottle." Ask a student to find the appropriate label and tape it to the container.

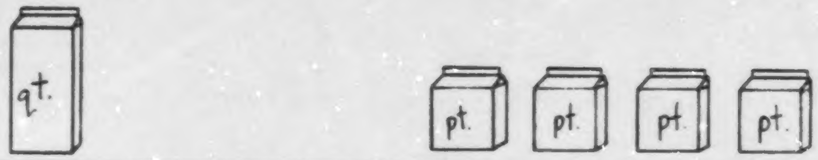
Repeat this procedure using the other containers.

STRATEGY 2: Display jars, bottles and containers of various sizes and shapes. Prepare a standard cup, pint and quart container with water available for measuring. Ask a student to choose one jar and estimate whether the amount of water in it would fill a cup, a pint, or a quart container. Ask students to check their answers by pouring water into the standard cup, pint or quart container.

P.O. 2.10.10.01

NAME: ______________________________ CLASS: __________ DATE: ________

Mark the same amount.


qt.
pt.
pt.
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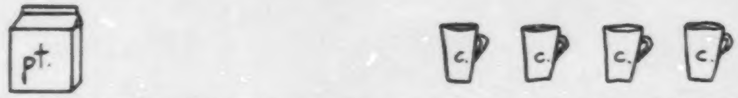
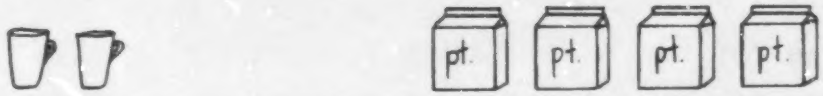
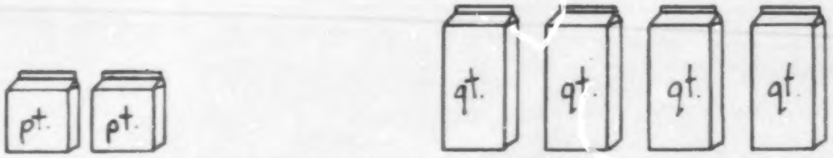
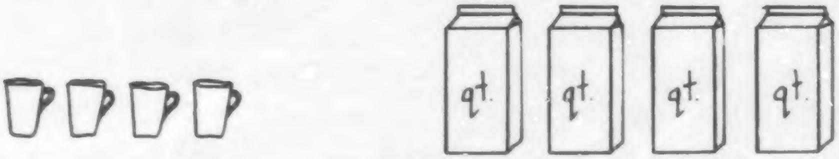
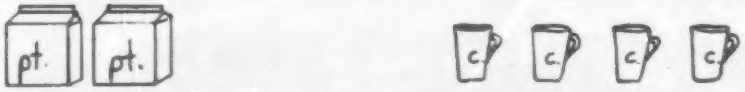
pt.






pt.
pt.
qt.
qt.
qt.
qt.

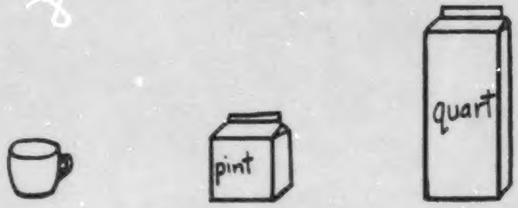




P.O. 2.10.10.02

NAME: ______________________ CLASS: __________ DATE: ________

Draw a circle around the amount that matches.

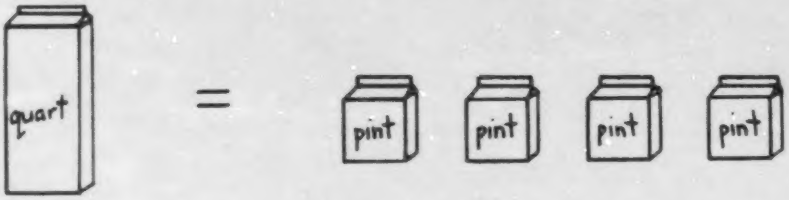


cup

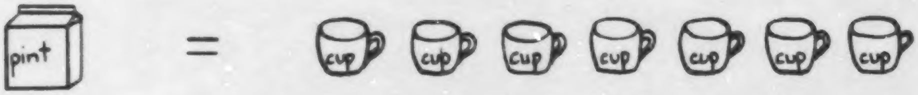
1 pint
(2 cups)

1 quart
(2 pints)

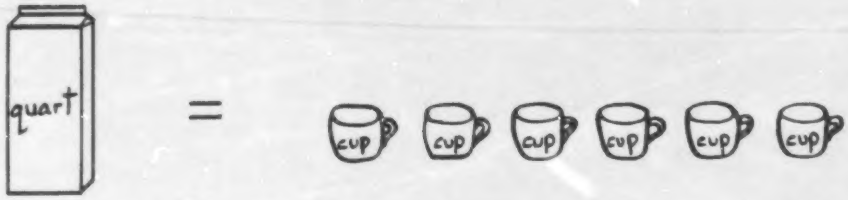
1


quart
=
pint
pint
pint
pint

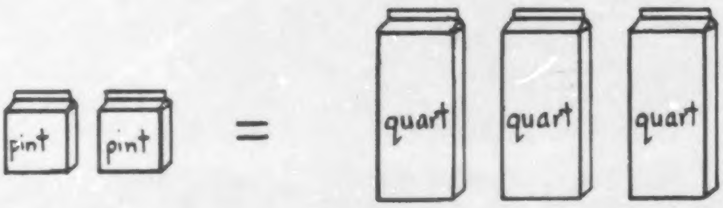
2


pint
=
cup
cup
cup
cup
cup
cup
cup

3


quart
=
cup
cup
cup
cup
cup
cup

4


pint
pint
=
quart
quart
quart

2.02.05 ADDITION OF 2-DIGIT NUMBERS WITH REGROUPING ONES TO TENS

(3 lessons)

PERFORMANCE OBJECTIVES

The student will able to...

2.02.05.01B add two 2-digit numbers with regrouping (exchange) using expanded notation and check;

e.g.,

$$\begin{array}{rcl} 26 & = & 20 + 6 \\ +\ 47 & = & 40 + 7 \\ \hline 60 + 13 & = & 60 + 10 + 3 \\ & = & 70 + 3 \\ & = & 73 \end{array} \qquad \begin{array}{r} \text{check} \\ 1 \\ 47 \\ +26 \\ \hline 73 \end{array}$$

2.02.05.02B add two 2-digit numbers with regrouping (exchange) ones to tens and check:

e.g.,

$$\begin{array}{r} 1 \\ 46 \\ +\ 27 \\ \hline 73 \end{array} \qquad \begin{array}{r} \text{check} \\ 1 \\ 27 \\ +46 \\ \hline 73 \end{array}$$

2.02.05.03B solve story problems related to skills learned in this module.

e.g.,

Mary had 26 marbles. Susan had 48 marbles. How many marbles did the girls have in all?

$$\begin{array}{r} 1 \\ 26 \\ +\ 48 \\ \hline 74 \text{ marbles} \end{array}$$

2.02.05

VOCABULARY

TERMS

regroup
expanded notation
digits

GETTING STARTED

Play a game called "Land of Ten." The rules of this land are that only ten people can go into the Fun House at one time, no more, no less. Write two digits on the chalkboard, e.g., 8 and 5. Arrange two groups of students - eight in one group, five in the other. Say, "Can the group of eight go into the Fun House? What do they need? (Two more people.) What shall we do?" (Take two students from the group of five.) Ask two students to walk to the group of eight. Say, "How many are in this group now? (10) How many are in the other group? (3) How many students in all? (13) Is 8 + 5 the same as 10 + 3? Why?"

Repeat this procedure with other numbers.

Prepare two boxes containing bundles of tens and ones. Write 13 on the chalkboard. Ask a student to select materials to equal 13. If he/she selects 13 ones, say, "Do you have more than 10? Exchange the 10 ones for one bundle of 10. What is 13?" (1 ten and 3 ones.)

Repeat this procedure with other 2-digit numbers.

2.02.05

2.02.05.01 **add two 2-digit numbers with regrouping (exchange) using expanded notation and check**

STRATEGY 1: Prepare two sets of cards. Number the first set from 0 through 9 and the second set from 10 through 90. Be sure to include two cards numbered 10. Distribute the cards to two groups of nine students. Keep the extra 10 card. Group 1 gets cards numbered 0 through 9. Group 2 gets cards numbered 10 through 90. Write $\begin{array}{r}24\\+38\\\hline\end{array}$ on the chalkboard. Say, "What does 24 represent?" (2 tens and 4 ones) Ask the students holding those cards to stand. Say, "What does 38 represent? If you are holding 30 or 8, please stand. The students holding 30 and 20 stand together and the students holding 4 and 8 stand together. How much is 4 + 8? What does 12 represent? (1 ten and 2 ones) Will the students holding the 10 card and the 2 card, please take the place of the 4 and 8. Now we have 20 + 30 and 10 + 2. Let's add the tens (20+30+10). They equal 60. Will the student with 60 come to the front of the room to replace 20, 30, and 10. Will the 2 please stand next to the 60. Let's read the new number." (62)

Say, "When we add two numbers, does the answer stay the same if we change the order of the numbers? (yes) We can use this idea to help us see if we have the correct answer when we add large numbers." Write $\begin{array}{r}24\\+38\\\hline 62\end{array}$ and $\begin{array}{r}38\\+24\\\hline\end{array}$ on the chalkboard.

Say, "What do you think the answer to the second example will be? Since we have the same answer both times, we can be fairly sure that 62 is the correct answer. This is called checking an example." Repeat this procedure using other numbers.

STRATEGY 2: Draw a place value chart on the chalkboard.

Write $\begin{array}{r}24\\+38\\\hline\end{array}$

Tens	Ones
2	4
3	8

2.02.05

STRATEGY 2: cont'd

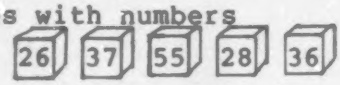
Say, "What shall we put in the place value chart? (2 tens and 4 ones) What shall we put in next? (3 tens and 8 ones) How many tens do we have altogether? (5 ten or 50) How many ones do we have altogether? (12) How can we regroup the 12 ones? Regroup them as 1 ten and 2 ones. (Write 50 + 10 + 2 = ☐.) Let's group the tens together (50 + 10) + 2. How much is 50 + 10? 60 plus 2 equals 62." Write on the chalkboard the steps used to solve the example.

example	step 1	steps 2 and 3	step 4	step 5
$\begin{array}{r}24\\ \underline{+38}\end{array}$	50 + 12 = without bracket	(50 + 10) + 2 = with bracket	60 + 2 =	62

Check this example using the commutative property.

Repeat this procedure using other numbers.

2.02.05.02 **add two 2-digit numbers with regrouping (exchange) ones to tens and check**

STRATEGY 1: Display five or six empty boxes with numbers written on the outside, e.g., 

Ask a student to choose two boxes. Say, "Imagine that there are 26 books in this box and there are 37 books in this box. How many books are there altogether? How do we find out?" Write $\begin{array}{r}26\\ \underline{+37}\end{array}$ on the chalkboard.

Say, "Let's add the ones column first. How much is 6 and 7? Can we regroup 13 as tens and ones? I will write the 3 in the ones place and the 1 ten in the tens place. How many tens do we have?" Write the 6 in the tens place. Say, "How many books are there altogether? Do you think our answer would have been 63 if we had chosen 37 first and then 26?" Write both examples on the chalkboard.

e.g.,

$$\begin{array}{r}26\\ \underline{+37}\end{array} \qquad \begin{array}{r}37\\ \underline{+26}\end{array}$$

STRATEGY 1: cont'd

Say, "What was the answer for the first example? (63) Let's do the second example and see what the answer will be. Since we have 63 as the answer to both examples, we can be fairly sure that 63 is the correct answer."

Repeat this procedure using other boxes. Check by using the commutative property.

STRATEGY 2:

Prepare and display six boxes numbered with two-digit numbers. Place the corresponding number of counting objects inside the boxes, e.g., the box marked 26 has 2 bundles of ten and 6 units. Draw a place value chart on the chalkboard.

e.g.,

Tens	Ones
2	6
3	7

Ask a student to take the box numbered 26. Say, "How many tens and ones represent 26? Come to the chalkboard and write 2 in the tens place and 6 in the ones place." Do the same with another two-digit number, e.g., 37. Write $\begin{array}{r}26\\+37\\\hline\end{array}$ on the chalkboard. Say, "How much is 6 + 7? Is that more than 10? What shall we do?" (Write 3 in the ones place. Exchange the 10 ones for 1 ten.) Write the number 1 in the tens place.

e.g.,

$$\begin{array}{r}1\\26\\+37\\\hline63\end{array}$$

Say, "How many tens do we have now? (6) What is our answer?" (63) Check this example using the commutative property.

Repeat this procedure using other examples.

2.02.05.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Prepare three empty boxes and sets of tens and ones. Say, "There were 24 tigers in one cage and 28 lions in another. How many animals were there?" Display a box. Say, "This box will be the tiger's cage. What number shall we put in this box to represent the number of tigers? (24) How shall we represent 24?" Place 2 bundles of ten and 4 sticks in the box. Hold up box 2 and say, "This is the lion's cage. What number shall we put in this box?" Place 2 bundles of ten and 8 ones in box 2. Say, "What do we want to find out? (How many animals altogether?) How do we do that?" (Add.) Put the contents of the two boxes into the third box and ask a student to count them. Say, "What do we do when we put things together? (We add.) How many do we have in box 3? (5 tens and 12 ones.) Let's add them together."

e.g.,

$$50 + 12 = 50 + 10 + 2 = 60 + 2 = 62$$

Ask the students to check the example.

Repeat this procedure using other story problems.

STRATEGY 2: Write the following problem on the chalkboard.

e.g.,

> Jose had 29 marbles. Carmen had 28 marbles. How many marbles do they have altogether?

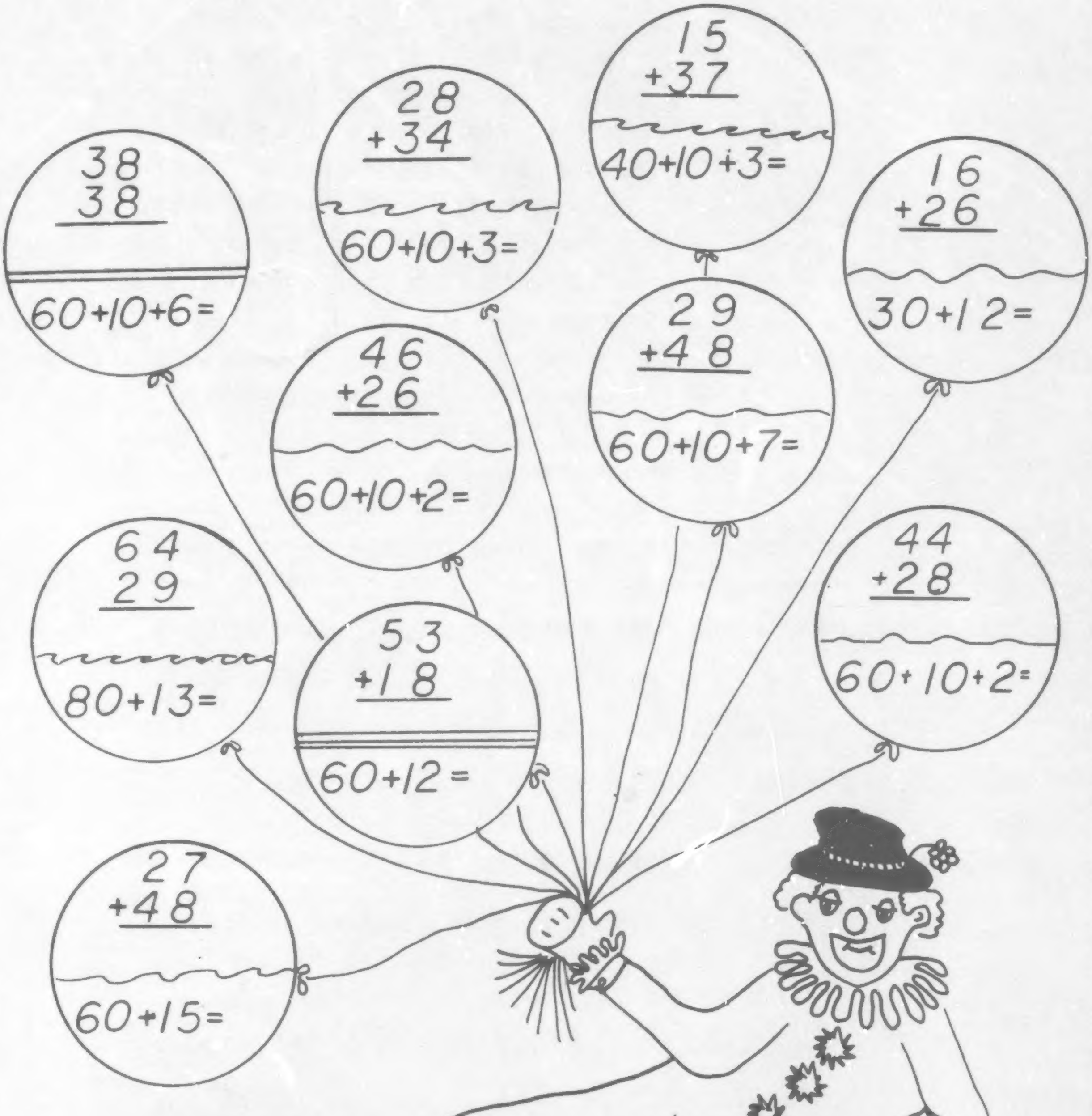
Read this story to the students. Say, "How can we find the answer? (add) What words tell us to add?" (altogether) Ask a student to come to the chalkboard and write the example. Ask another student to solve the problem.

Repeat this procedure with other story problems.

P.O. 2.02.05.01

NAME:____ **CLASS:**__________ **DATE:**_________

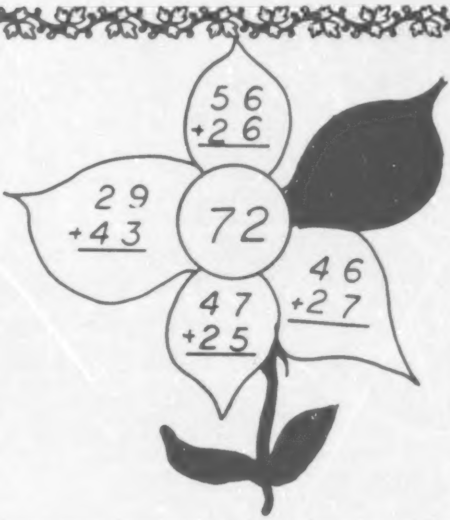
Do the addition. Color the balloons that have examples which are equal. Three balloons will not be colored.

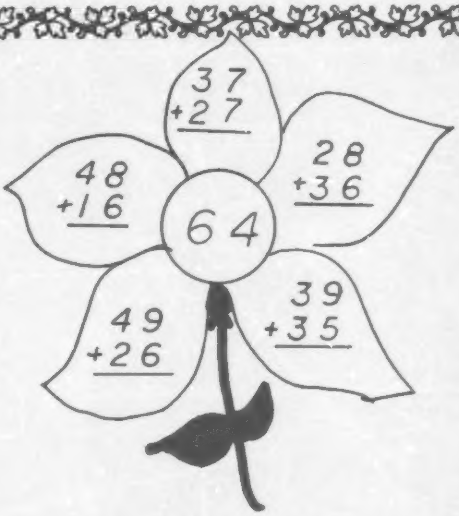

15
+37
40+10+3=
28
+34
60+10+3=
38
38
60+10+6=
16
+26
30+12=
29
+48
60+10+7=
46
+26
60+10+2=
64
29
80+13=
53
+18
60+12=
44
+28
60+10+2=
27
+48
60+15=

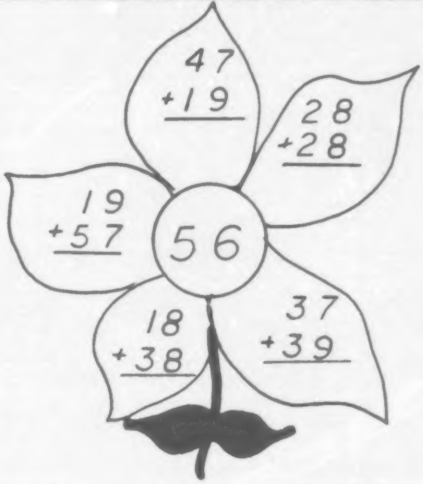
P.O. 2.02.05.02

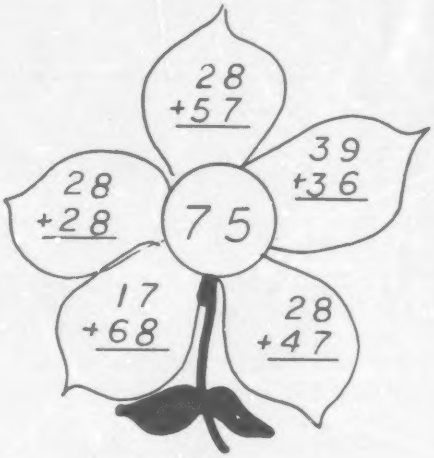
NAME: ______________________ CLASS: __________ DATE: ________

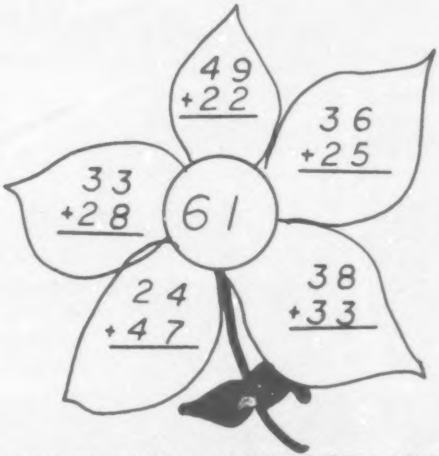
Do the addition. Color the petals that have the same number as the center of the flower.

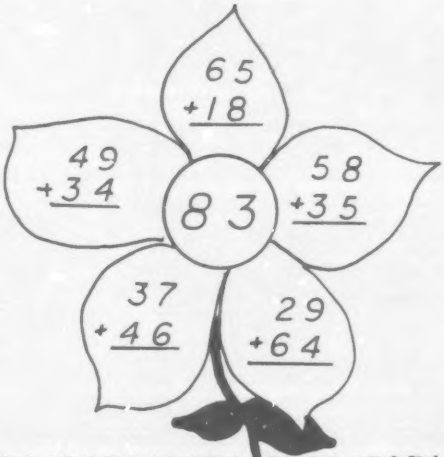

72
56 + 26
29 + 43
47 + 25
46 + 27


64
37 + 27
48 + 16
28 + 36
49 + 26
39 + 35


56
47 + 19
28 + 28
19 + 57
18 + 38
37 + 39


75
28 + 57
28 + 28
39 + 36
17 + 68
28 + 47


61
49 + 22
36 + 25
33 + 28
24 + 47
38 + 33


83
65 + 18
49 + 34
58 + 35
37 + 46
29 + 64

P.O. 2.02.05.03

NAME:____ CLASS:_________ DATE:________

Read the problem. Do the work on the side.
Fill in the blank with your answer.

Ann saw 24 fat clowns and 17 thin clowns. How many clowns did she see in all?

_______________ Clowns

I counted 27 pink elephants and 37 purple elephants. How many elephants did I count?

_______________ Elephants

36 boys and 27 girls went to the circus. How many youngsters went to the circus?

_______________ Youngsters

17 people got out of the little car. Then 29 more people got out. How many people were in the car?

_______________ People

34 gray horses came out. Then 28 white horses followed. How many horses were in the ring?

_______________ Horses

2.03.03 SUBTRACTION OF 2-DIGIT NUMBERS WITH REGROUPING

(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.03.03.01B subtract a 2-digit number from a 2-digit number with regrouping (exchange) tens to ones and check;

e.g.,

$$\begin{array}{r} 3\phantom{5\text{¢}} \\ \cancel{4}5\text{¢} \\ -\ 28\text{¢} \\ \hline 17\text{¢} \end{array} \qquad \begin{array}{r} \underline{\text{check}} \\ 28\text{¢} \\ +\ 17\text{¢} \\ \hline 45\text{¢} \end{array}$$

2.03.03.02B subtract money through 99¢ and check;

e.g.,

$$\begin{array}{r} 3\phantom{3\text{¢}} \\ \cancel{4}3\text{¢} \\ -\ 28\text{¢} \\ \hline 15\text{¢} \end{array} \qquad \begin{array}{r} \underline{\text{check}} \\ 28\text{¢} \\ +\ 15\text{¢} \\ \hline 43\text{¢} \end{array}$$

2.03.03.03B solve story problems related to skills learned in this module.

e.g.,

Joel had 54 baseball cards. He gave Bob 19 cards. How many cards did Joel have left?

$$\begin{array}{r} 4 \\ \cancel{5}4 \\ -\ 19 \\ \hline 35 \end{array} \text{ cards} \qquad \begin{array}{r} \underline{\text{check}} \\ 19 \\ +\ 35 \\ \hline 54 \end{array}$$

VOCABULARY

TERMS

subtraction
difference
subtract

GETTING STARTED

Prepare and display two plastic containers labeled TENS and ONES and bundles of sticks representing tens and loose sticks representing ones. Distribute tens and ones sticks to each student.

Place three bundles of ten in the TENS can and six ones in the ONES can. Write 36 on the chalkboard. Say, "Show 36 with your sticks. We want to remove 9 ones from the can. Who can write the number sentence to show this problem? ($\begin{array}{r}36\\ \underline{-9}\end{array}$) How can we take 9 away from 36 with the sticks we have?" Untie one bundle of ten and place it in the ones pile. Say, "Who can tell us how many sticks are in the ones pile? (16) How many bundles of ten do we have left? (2) If we take 9 ones away, how many sticks are left?"

Repeat this procedure with other examples.

Ask a student to write a 2-digit number on the chalkboard. Ask another student to write a 1-digit number below the 2-digit number. Ask a third student to do the subtraction and a fourth to check it by addition. Repeat this procedure using other examples.

e.g.,

#1	#2	#3	#4 check
39	$\begin{array}{r}39\\ \underline{-6}\end{array}$	$\begin{array}{r}39\\ \underline{-6}\\ 33\end{array}$	$\begin{array}{r}6\\ \underline{+33}\\ 39\end{array}$

2.03.03

2.03.03.01 **subtract a 2-digit number from a 2-digit number regrouping (exchange) tens to ones and check**

STRATEGY 1: Prepare and distribute bundles of sticks in groups of ten and as units to each student or group of students. Write $\begin{array}{r}52\\-24\\\hline\end{array}$ on the chalkboard.

Say, "Hold five bundles of ten and two single sticks. How many sticks do you have? (52) We want to remove 24 sticks. What shall we do first? (We must untie a bundle of tens and place them with the ones.) How many bundles of ten are left? (4) How many ones do you have? (12) Remove 4 ones. How many ones are left? (8) Remove 2 tens. How many tens are left?" (2)

Write $\begin{array}{r}\overset{4}{\cancel{5}}2\\-24\\\hline 28\end{array}$ on the chalkboard.

Say, "Let's check our answer. We are going to add the answer (28) and the number we subtracted (24). Our answer should be the same as the minuend." e.g.,

$$\begin{array}{r}28\\+24\\\hline 52\end{array}$$

Repeat this procedure with other examples.

2.03.03.02 **subtract money through 99¢ and check**

STRATEGY 1: Divide the class into groups of five. Distribute dimes and pennies or a facsimile to each group. Say, "Place three dimes and four pennies in the center of your desk. How much money is this?" Write $\begin{array}{r}34¢\\-18¢\\\hline\end{array}$ on the chalkboard. Say, "How can we subtract (take away) 18¢? (Exchange one dime for

STRATEGY 1: cont'd

ten pennies.) How many pennies do you now have? (14) How many dimes are left? (2) Do the subtraction." Ask a student to complete the example on the chalkboard. Say, "Check your work by adding 16¢ and 18¢, using your dimes and pennies."

Repeat this procedure with other examples.

STRATEGY 2: Ask a student to write an amount of money not more than 99¢ on the chalkboard. Ask another student to write a smaller amount beneath the first amount.

$$\text{e.g.,}\quad \begin{array}{r} 73¢ \\ \underline{45¢} \end{array}$$

Ask a third student to do the subtraction. Ask another student to check by addition.

$$\begin{array}{r} 73¢ \\ -45¢ \\ \hline 28¢ \end{array} \qquad\qquad \begin{array}{r} \underline{\text{check}} \\ 28¢ \\ -45¢ \\ \hline 73¢ \end{array}$$

Repeat this procedure using other examples.

2.03.03.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Write the following problem on the chalkboard.

> Robert has 43 baseball cards. He gave Maria 25 cards. How many cards does Robert have left?

Ask a student to read the problem. Say, "[illegible] must we do to solve this problem?" Ask a student to do the subtraction at the chalkboard while the rest of the class does it in their notebooks.

STRATEGY 1: cont'd

e.g.,

$$\begin{array}{r} 43 \\ -25 \\ \hline 18 \end{array} \text{ cards}$$

Say, "How many cards does Robert have left?" (18) Ask another student to check the answer by addition.

e.g.,

check

$$\begin{array}{r} 18 \\ +25 \\ \hline 43 \end{array} \text{ cards}$$

Repeat this procedure with other story problems.

STRATEGY 2: Write the following story problem on the chalkboard.

> Susan has 72¢. She bought an ice cream cone for 35¢. How much money does she have left?

Ask a student to read the problem. Say, "What must we do to find the answer to this problem?" Write the example on the chalkboard, e.g., $\begin{array}{r} 72\text{¢} \\ -35\text{¢} \\ \hline \end{array}$.

Ask a student to solve the problem at the chalkboard while the rest of the class does it in their notebooks, e.g., $\begin{array}{r} 72\text{¢} \\ -35\text{¢} \\ \hline 37\text{¢} \end{array}$. Say, "How much money does Susan have left?" (37¢) Ask another student to check the answer.

e.g.,

check

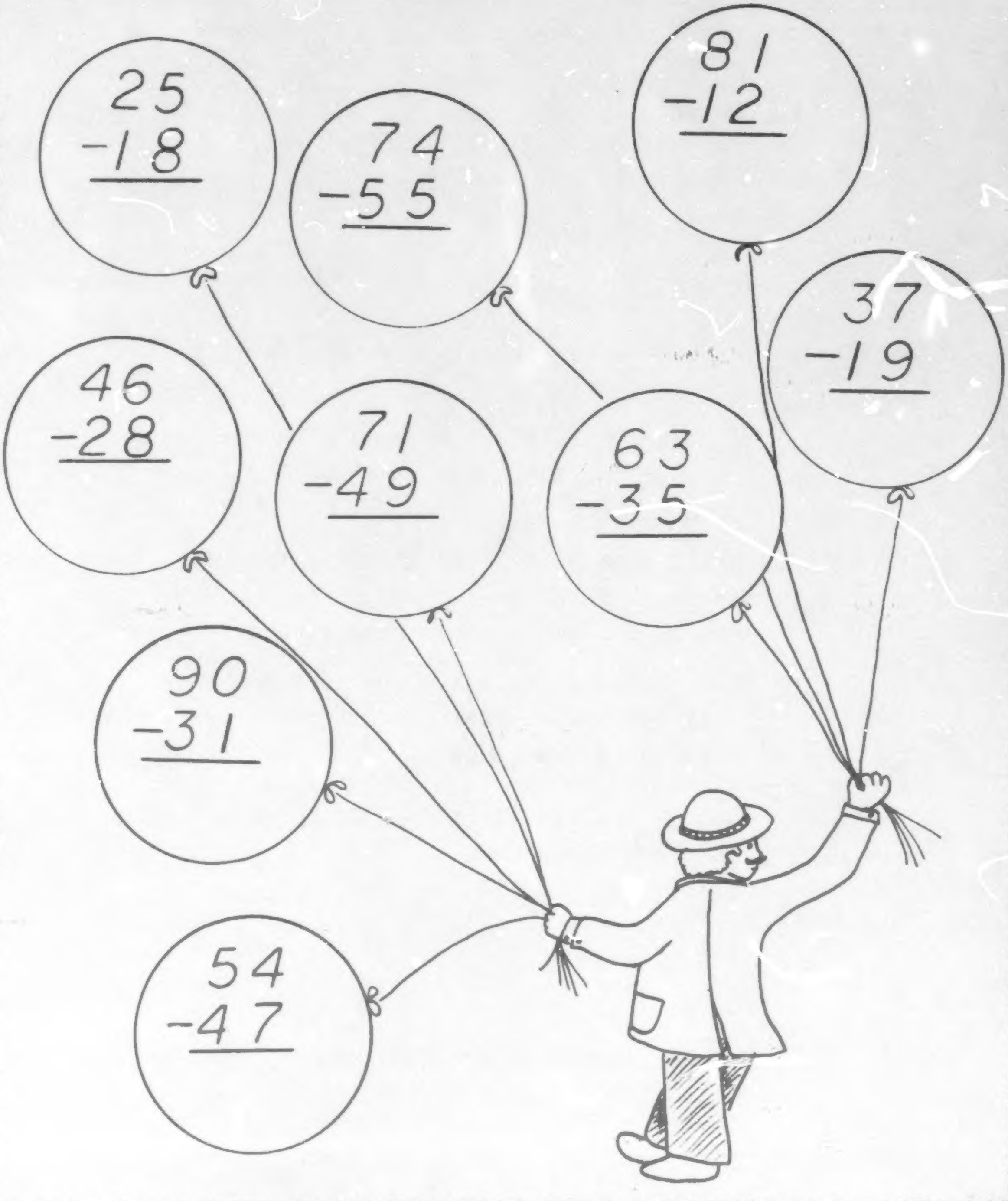
$$\begin{array}{r} 37\text{¢} \\ +35\text{¢} \\ \hline 72\text{¢} \end{array}$$

Repeat this procedure with other story problems.

P.O. 2.03.03.01

NAME:____CLASS:__________DATE:_______

After you find the answer place an X on the string to release each balloon. Remember to check your answer.



25 -18
74 -55
81 -12
37 -19
46 -28
71 -49
63 -35
90 -31
54 -47

P.O. 2.03.03.02

NAME: ______________________ CLASS: __________ DATE: ________

Find out how much money each student has left after they each spend some money. Remember to check your answer.

Lorraine has 23¢	Tommy has 45¢	Susan has 17¢	Robert has 96¢	Maria has 58¢	John has 71¢
and spent 16¢	and spent 27¢	and spent 8¢	and spent 37¢	and spent 29¢	and spent 14¢
$\overset{1}{\cancel{2}}\,\overset{13}{\cancel{3}}$¢ −16¢ 7¢	45¢ −27¢				
Lorraine has ☐7¢ left	Tommy has ☐ left	Susan has ☐ left	Robert has ☐ left	Maria has ☐ left	John has ☐ left
Check ☐7¢ +16¢ 23¢	Check ☐ + ____	Check ☐ + ____	Check ☐ + ____	Check ☐ + ____	Check ☐ + ____

BEST COPY AVAILABLE

P.O.2.03.03.03

NAME:________________________________ CLASS:__________ DATE:________

Help these students to solve their problem. Remember to check the answer.

Cathy had 75¢. She spent 37¢. How much money did she have left?

Solve **Check**

$$\begin{array}{r} {}^{6}\cancel{7}{}^{15}\cancel{5}\text{¢} \\ -37\text{¢} \\ \hline 38\text{¢} \end{array} \qquad \begin{array}{r} 38\text{¢} \\ +37\text{¢} \\ \hline 75\text{¢} \end{array}$$

Jose bought 32 cupcakes for his birthday party. 25 students ate a cupcake. How many cupcakes were left?

Solve **Check**

Louis had 43 baseball cards. He lost 17 cards flipping with Barbara. How many cards does Louis have left?

Solve **Check**

There are 26 students in Miriam's class. There are 18 girls. How many boys are there in Miriam's class?

Solve **Check**

George has 61 red and blue chips. If he has 14 red chips, how many blue chips does he have?

Solve **Check**

Richard flipped 55 football cards. 38 landed "heads up". How many landed on "tails"?

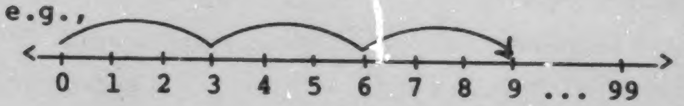
Solve **Check**

2.01.10 COUNT FORWARD AND BACKWARD BY PATTERNS OF THREE

(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.01.10.01B	identify the numbers from 0 through 99 by threes; e.g., 
2.01.10.02B	write and order the numbers from 0 through 99, counting by threes; e.g., 0, 3, 6, 9, 12, ... 99
2.01.10.03C	count and write the numbers from 0 through 99 in backward order by threes. e.g., 99, 96, 93, ...

2.01.10

VOCABULARY

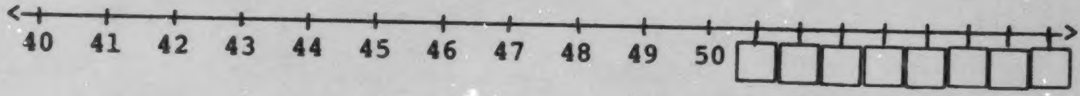
TERMS

forward
backward
patterns

GETTING STARTED

Prepare a set of cards numbered from 0 through 100. Hold up one card and ask a student to give the next three numbers in order, e.g., hold up card 25 and the student will answer 26, 27, 28. Ask another student to count backward from 25 to 22. Hold up several other cards and ask for a forward and then a backward count.

Draw a number line on the chalkboard.
e.g.,



Ask the students to complete labeling the number line using the following unordered numbers, e.g., 53, 55, 54, 52, 57, 58, 51, 56.

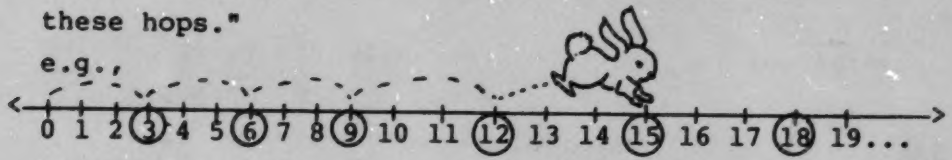
Repeat this procedure using other numbers on the number line.

2.01.10

2.01.10.01 **identify the numbers from 0 through 99 by threes**

STRATEGY 1: Prepare and display a 0 through 100 number line. Say, "This little rabbit is going to start at zero and take one hop to three. How many spaces did he hop? (3) If he takes another hop of three, where will he land? (6) The rabbit is going to hop to 99 and only rest on every third place. Circle every multiple of 3 on the number line to show these hops."

e.g.,



STRATEGY 2: Prepare and tape a large hundreds chart to the chalkboard. Prepare and distribute a chart to each student. Ask one student to mark the demonstration chart while the others work at their seats. Say, "We are going to start at 0 and count 3 spaces each time. Put a circle around 3. If we count another three spaces, where will we be? (6) Circle the 6." Repeat this procedure, circling all multiples of three through 99 on the hundreds chart.

2.01.10.02 **write and order the numbers from 0 through 99, counting by threes**

STRATEGY 1: Prepare and distribute a 0 through 100 number line to each student. Say, "There is a frog who lives under the number 99. He needs help getting home because he is tired. He may only rest on every third number. Every time the frog rests, we must write the number. Our frog will start at zero.

STRATEGY 1: cont'd

Where will he rest first? (3) Write 0 and 3 on the number line. Where will he rest next?" (6) Repeat this procedure for ordering by threes through 99.

Write four multiples of three on the chalkboard, e.g., 6, 12, 3, 9. Ask a student to come to the chalkboard and write these numbers in correct order for counting by threes, e.g., 3, 6, 9, 12. Repeat this procedure with other multiples of three.

STRATEGY 2: Arrange the class into groups of four. Prepare and distribute boxes of 99 ones pieces (squared materials) to each group. Say, "There are the same number of pieces in each box. How many pieces are in your box? Count the pieces in groups of three. Keep a list of the numbers." Demonstrate by counting three, setting them aside and writing 3. Count three more, set them aside and write 6... Say, "Two students should count the pieces and two students should record the numbers."

Prepare and display five number cards which are consecutive multiples of three, e.g., 15, 21, 18, 24, 27. Ask the students to place the cards in correct order for counting by threes. Repeat this procedure with other multiples of three.

2.01.10.03 **count and write the numbers from 0 through 99 in backward order by threes**

STRATEGY 1: Display a bead frame. Say, "There are 99 beads on this frame." Write 99 on the chalkboard. Count off three beads, saying, "99, 98, 97. What number are we on now?" (96) Continue counting off three

STRATEGY 1: cont'd beads at a time and writing the numbers on the chalkboard, e.g., 99, 96, 93...

STRATEGY 2: Play a game called "Guess My Rule". Draw the gameboard on the chalkboard with input and output columns. Start with an input of 21. Say, "The output is 18. The next input is 18 and the output is 15. If the next input is 15, what do you think the output will be? (12) What is our rule?" e.g.,

Input	Output
21	18
18	15
15	12

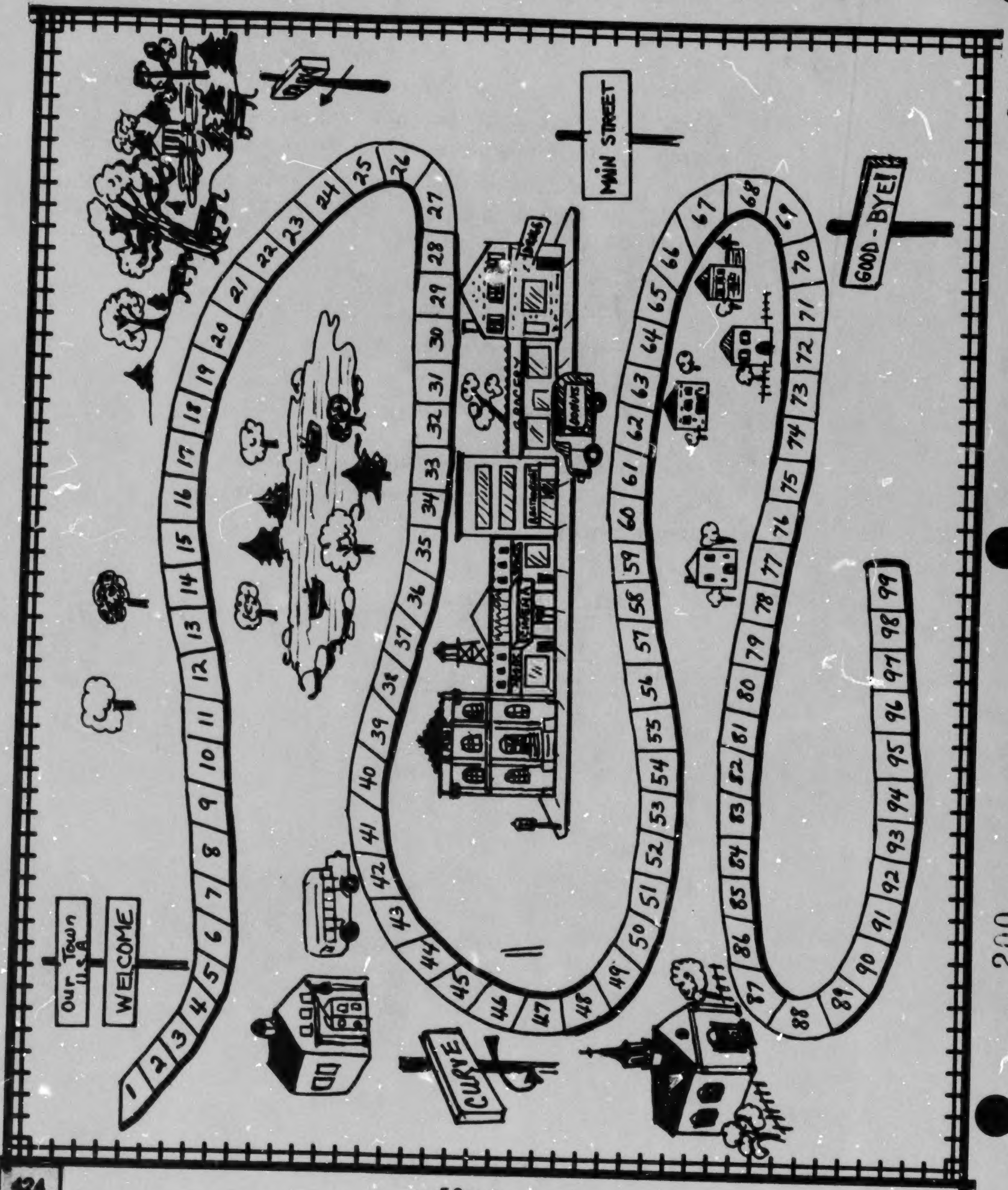
Write another "Guess My Rule" gameboard on the chalkboard and ask the students to complete it independently.
e.g.,

Input	Output
42	39
39	36
36	

P.O. 2.01.10.01

NAME: ______________________ CLASS: ______ DATE: ______

Color in every third number on the road through town.
Starting at number 3.


Our Town U.S.A.
WELCOME
CURVE
MAIN STREET
GOOD-BYE!
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
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85
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87
88
89
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91
92
93
94
95
96
97
98
99

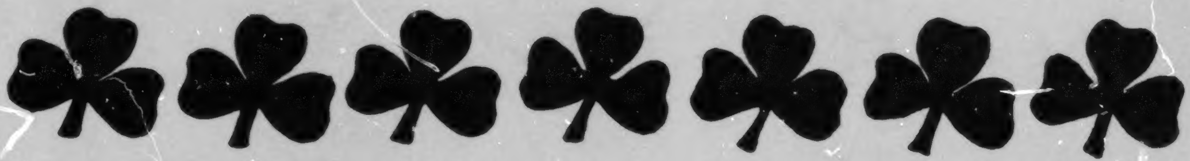
P.O. 2.01.10.02

NAME: ______________________ CLASS: ________ DATE: ________

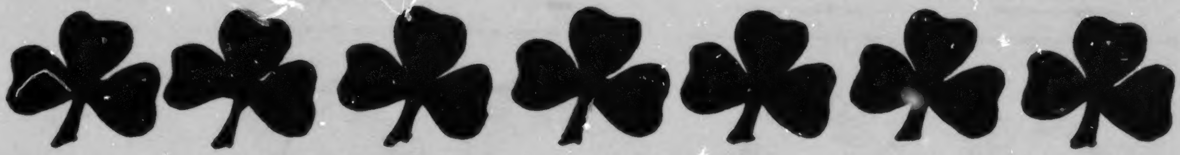
Fill in the blanks.

HOW MANY LEAVES IN ALL?

WRITE THE NUMBER UNDER EACH CLOVER.



3 6 ___ ___ ___ ___ ___



___ ___ ___ ___ ___ ___ ___

COMPLETE COUNTING BY THREE'S.

① 21, 24, 27, ___, ___, ___, ___, ___

② 45, 48, ___, ___, ___, ___, ___

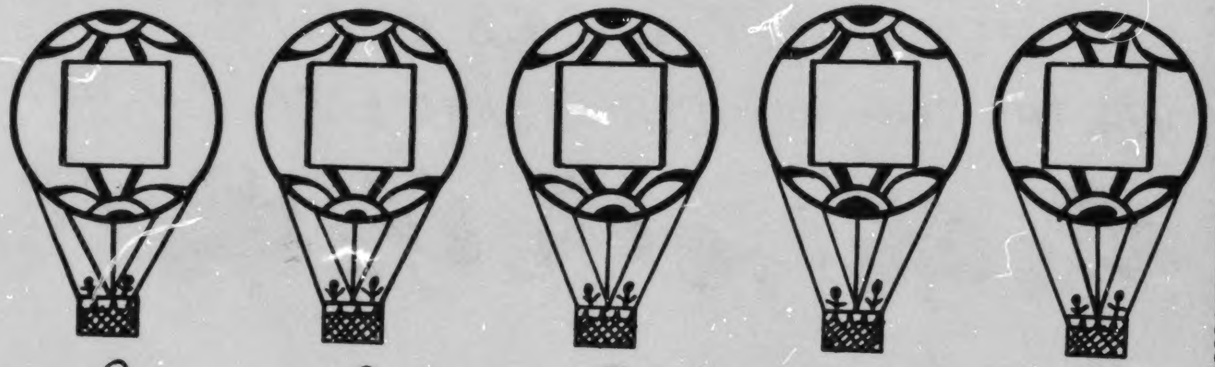
③ 69, 72, ___, ___, ___, ___

④ 87, 90, ___, ___, ___

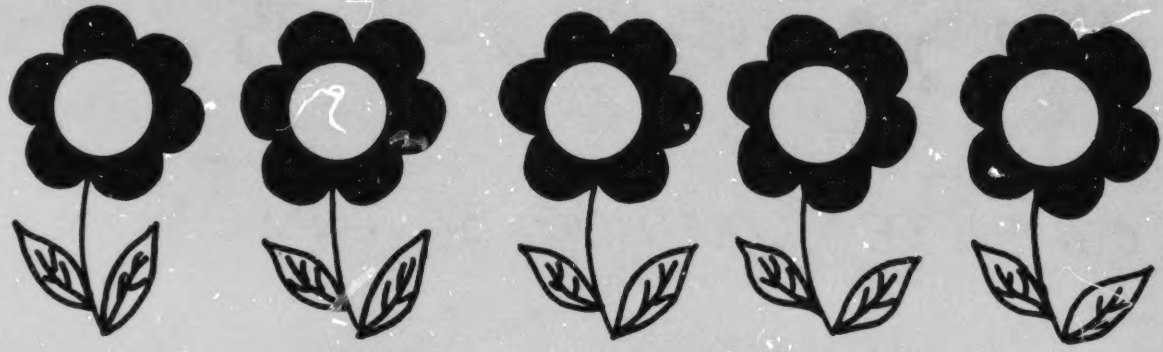
P.O. 2.01.10.02

NAME: ______________________ CLASS: ________ DATE: ________

Counting by threes, put the numbers in order.



9 6 3 12 15



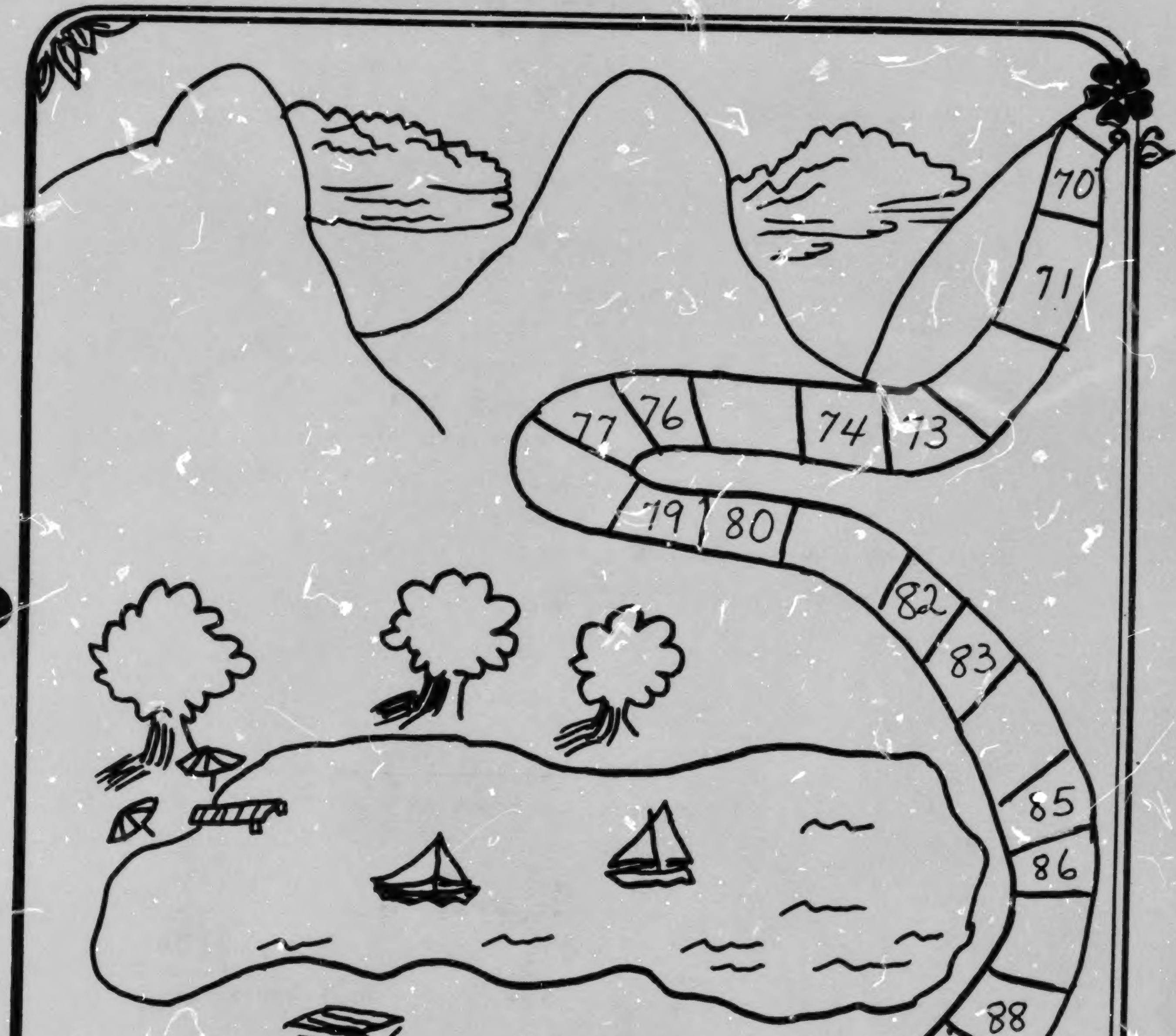
21 30 18 27 24

36 39 33 45 42

P.O. 2.01.10.03

NAME: ______________________ CLASS: __________ DATE: ________

Fill in the empty space with a number. Look for a pattern.


70
71
77
76
74
73
79
80
82
83
85
86
88
89
92
91
95
94
97
98

2.04.03 MULTIPLICATION FACTS FOR THREES THROUGH 15

(1-2 lessons)

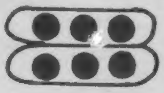
PERFORMANCE OBJECTIVES

The student will be able to...

2.04.03.01A count by threes;
e.g.,

1 group of three = 3
2 groups of three = 6
3 groups of three = 9
4 groups of three = 12
5 groups of three = 15

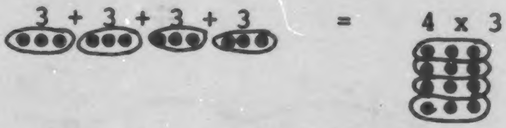
2.04.03.02B show groups of three;
e.g.,



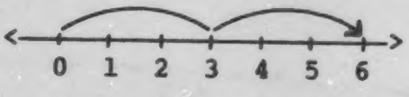
2 groups of three = 2 x 3

2.04.03.03A demonstrate that multiplication is the process of repeated addition of like addends;
e.g.,

3 + 3 + 3 + 3 = 4 x 3



2.04.03.04B use a number line to demonstrate counting by threes.
e.g.,



1 three = 3
2 threes = 6

2.04.03

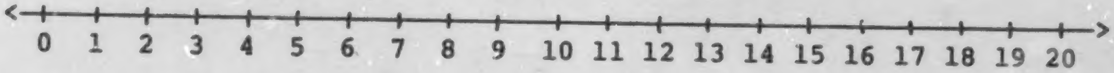
VOCABULARY

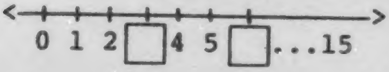
TERMS	SYMBOLS
multiplication	x

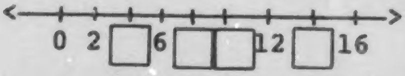
GETTING STARTED

Display a hundreds chart. Use a rhythm instrument to tap out the number three. Say, "Count the number of taps you hear. Who can locate the number of taps you heard on the hundreds chart and say the number's name?" Repeat this procedure, tapping out 6, 9, 12...

Display a 0 through 20 number line. Prepare two other number lines. e.g.,







Point to the first number line, 0 through 20, and say, "Let's read these numbers together. As I point to each number, say its name." Cover that number line and point to the number line marked in intervals of 3. Say, "What is different about this number line? Who can tell us what number is missing in the first box? Write the number 3 on the number line." Recite the numbers 0, 1, 2, 3. Repeat this procedure for the numbers 6, 9, 12 and 15.

Point to the second number line (numbered in multiples of two) and say, "Here is another number line with missing numbers. Let's see if we can fill in those missing numbers." Say that we are counting by twos on this number line. Repeat the above procedure for filling in the missing numbers. After all the missing numbers have been found, uncover the first number line so that the students are able to check their answers.

2.04.03

2.04.03.01 **count by threes**

STRATEGY 1: Prepare and distribute fifteen counters to each student. Draw a circle on the chalkboard and place three magnetic discs inside the circle. Say, "How many discs did I place inside the circle? This is one group of three discs. Use your counters to make one group of three." Draw another circle on the chalkboard and place three discs inside it. Say, "How many circles do you see? How many discs do you see inside each circle? These are two groups of three discs or 2 threes which equals six."

Repeat this procedure through five groups of three.

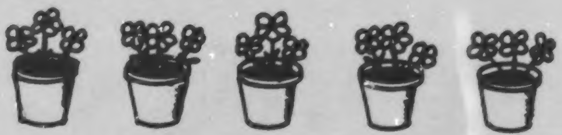
STRATEGY 2: Prepare and display a flannel board with three of the same cutouts. Say, "How many birds do you see? This is one group of three birds." Remove the felt pieces and ask a student to make one group of three birds on the flannel board. Write 1 group of three = 000 on the chalkboard and ask the students to repeat, "1 group of three equals 3." Say, "Please make two groups of three." After the student has correctly placed two groups of three on the board, write 2 groups of three = 000 000 on the chalkboard. Say, "What does this show?" (2 groups of three = 6)

Repeat this procedure through five groups of three.

2.04.03.02 **show groups of three**

STRATEGY 1: Display a picture of five flowerpots with three flowers in each flowerpot.

e.g.,



430

STRATEGY 1: cont'd

Point to the first flowerpot and say, "To how many flowerpots am I pointing? (1) How many flowers are in this flowerpot? (3) This is one group of three flowers. We can say that one group of three is the same as 1 x 3." Write 1 x 3 on the chalkboard. Point to two flowerpots and say, "How many flowerpots do you see? How many flowers are in each flowerpot? There are two groups of three flowers. We can say that two groups of three is the same as 2 x 3." (Write 2 x 3 on the chalkboard.) Repeat this procedure through five groups of three.

STRATEGY 2: Place three magnetic discs on the chalkboard. Give each student a large sheet of drawing paper and say, "Draw three circles on your paper. You have one group of three circles or 1 x 3." Write 1 x 3 on the chalkboard. Say, "Write 1 x 3 on your paper. Draw two groups of three circles. Who can show two groups of three discs on the chalkboard? We can say that two groups of three is the same as 2 x 3. Write 2 x 3 on your paper." Write 2 x 3 on the chalkboard. Repeat this procedure through 5 x 3.

2.04.03.03 **demonstrate that multiplication is the process of repeated addition of like addends**

STRATEGY 1: Place three magnetic discs on the chalkboard. Say, "How many discs do you see?" Write the number 3 under the discs. Say, "We can say that we have one group of three discs or 1 x 3." Write 1 x 3 next to the discs and place six discs on the chalkboard. e.g.,

●●●
●●●

STRATEGY 1: cont'd

Say, "Count how many discs there are. We counted a group of three discs two times. We can say that 3 + 3 equals 6 or two groups of three equals 6." Write 3 + 3 on the chalkboard. Write the algorithm 2 x 3 on the chalkboard.

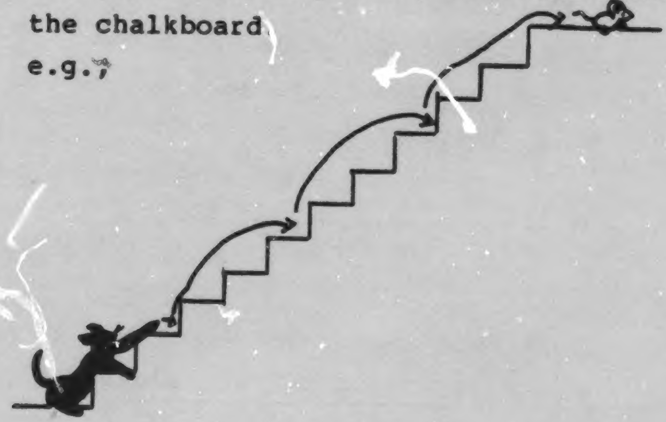
e.g.,

$$3 + 3 = 2 \times 3$$

Repeat this procedure through five groups of three.

STRATEGY 2: Prepare and display pictures of a cat and a mouse, each backed with tape. Draw a staircase with 15 steps on the chalkboard. Place the cat at the bottom of the stairs and the mouse at the top of the stairs. Say, "The cat can only move three steps at a time. Each time the cat moves, we say 'three'. How many steps must the cat climb to catch the mouse?" Move the cat three steps at a time and write each three on the chalkboard.

e.g.,



3 + 3 + 3...

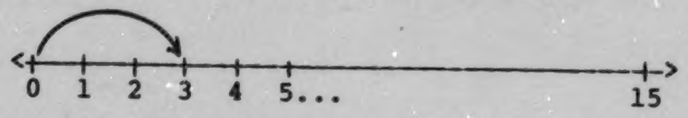
Say, "Another way to show 3 + 3 + 3 + 3 + 3 is 5 x 3. How much is 3 + 3 + 3 + 3 + 3? What does 5 x 3 equal? You can see that they are the same."

Repeat this procedure moving the mouse to other multiples of three.

2.04.03.04 **use a number line to demonstrate counting by threes**

STRATEGY 1: Display a 0 through 15 number line. Tape a picture of a rabbit to a magnetic disc. Draw a carrot under the numbers 1 through 15 on the number line. Say, "We are going to help Mr. Bunny jump for carrots." Place the rabbit on the number 3.

e.g.,

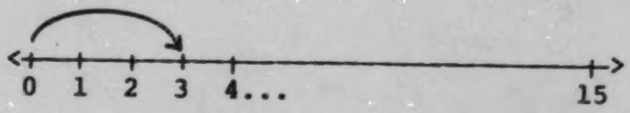


Say, "How many jumps did the rabbit make? (1) How many carrots did the rabbit get?" (3)

Place the rabbit on the number line at six. Say, "How many jumps did the rabbit make? (2) How many carrots did the rabbit get? (6) Two jumps gave the rabbit six carrots. 2 threes equal six." Repeat this procedure through five jumps of three (5 x 3 = 15).

STRATEGY 2: Display a 0 through 15 number line and distribute one to each student. Say, "Let's pretend that we are frogs. We are going to catch flies. Let's see how many flies we can catch." Point to the number line on the chalkboard.

e.g.,

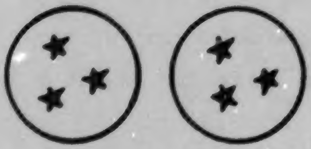


Say, "How many jumps did we make? (1) How many flies did we catch? (3) The frogs jumped one time in order to catch three flies. Draw one jump on your number line. Who would like to show how his/her frog can jump two times in order to catch six flies? We can see that 2 threes equal six. Draw two jumps on your number line." Repeat this procedure through five groups of three.

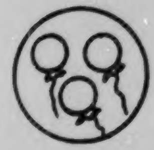
P.O. 2.04.03.01-.02

NAME: ______________________ CLASS: __________ DATE: ________

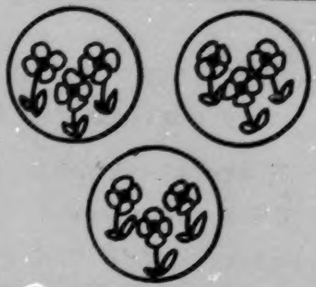
How many?



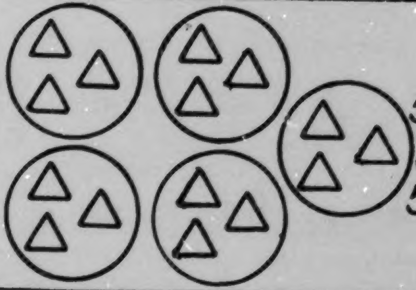
3 TWOS
3 THREES
[✓ 2 THREES]



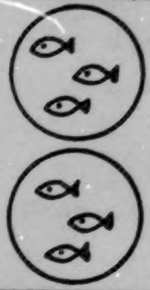
3 ONES
1 THREE
1 ONE



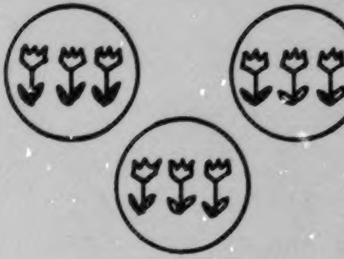
3 TWOS
2 THREES
3 THREES



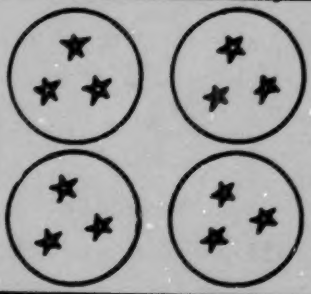
5 THREES
3 FIVES
5 FIVES



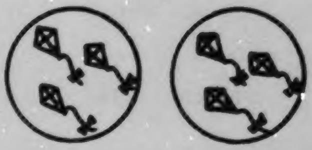
3 TWOS
2 TWOS
2 THREES



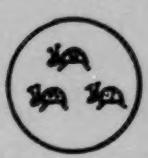
3 TWOS
3 THREES
2 THREES



4 THREES
3 FOURS
4 FOURS



2 TWOS
3 THREES
2 THREES

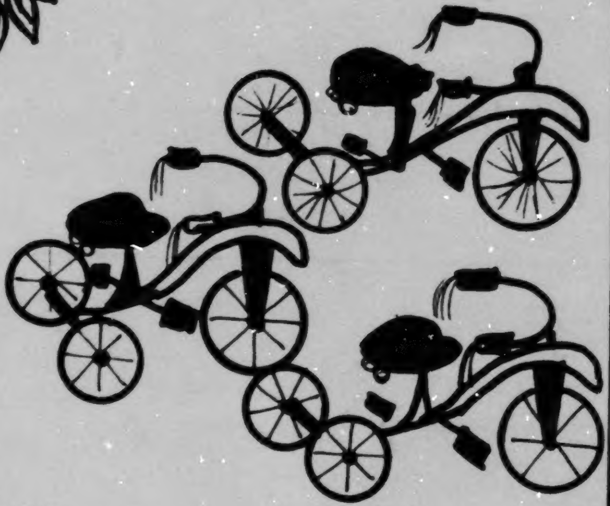


1 THREE
3 THREES
3 ONES

P.O. 2.04.03.03

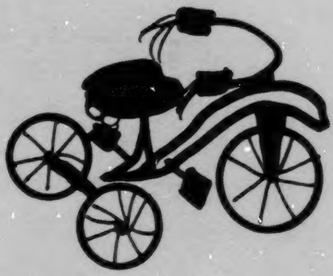
NAME:____________________________________ CLASS:__________ DATE:________

Count the wheels on the tricycles.

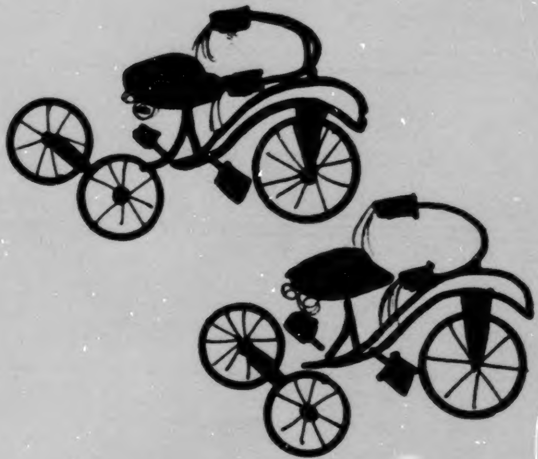


$3+3+3=\square$

$3\times3=\square$

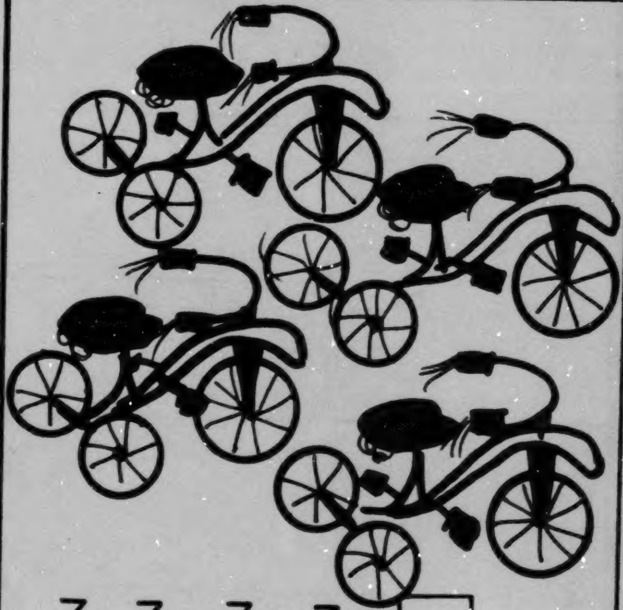


$1\times3=\square$



$3+3=\square$

$2\times3=\square$



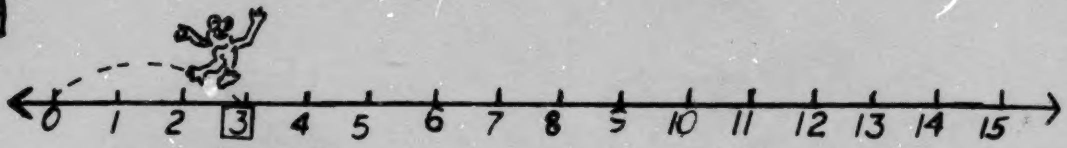
$3+3+3+3=\square$

$4\times3=\square$

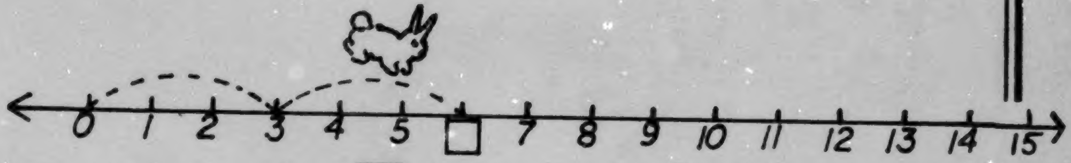
P.O. 2.04.03.04

NAME: ______________________ CLASS: __________ DATE: __________

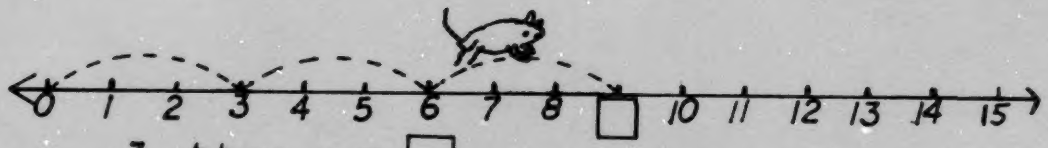
Count the jumps.


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

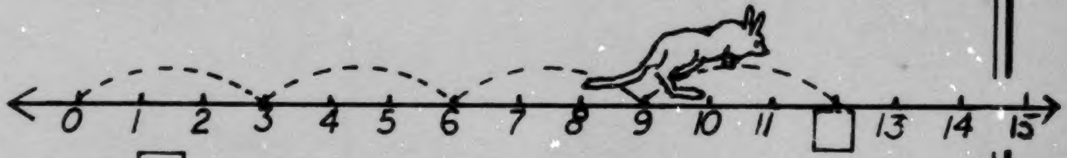
1 three = $\boxed{3}$


0 1 2 3 4 5 ☐ 7 8 9 10 11 12 13 14 15

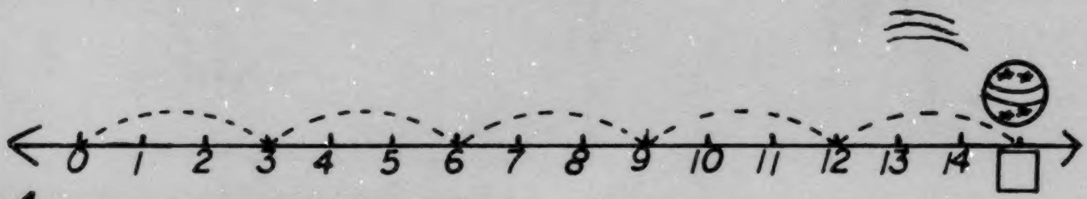
2 threes = ☐


0 1 2 3 4 5 6 7 8 ☐ 10 11 12 13 14 15

3 threes = ☐


0 1 2 3 4 5 6 7 8 9 10 11 ☐ 13 14 15

4 threes = ☐


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 ☐

5 threes = ☐

2.05.04 DIVISION FACTS FOR THREES THROUGH 15

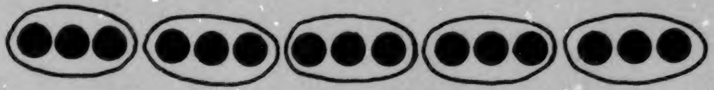
(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

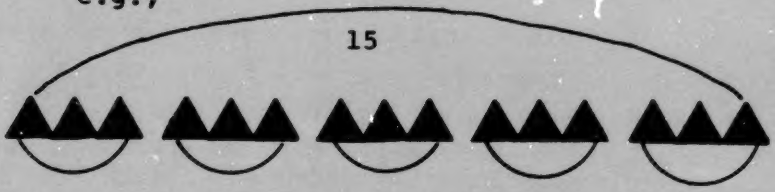
2.05.04.01A separate up to 15 objects into groups of 3 without a remainder;

e.g.,



2.05.04.02B identify the number for a given set (through 15) and tell how many groups of 3 are in that set;

e.g.,



5 groups of 3

2.05.04.03B solve story problems related to skills learned in this module.

e.g.,

There are 12 wheels. Each tricycle needs 3 wheels. How many tricycles can John make?

$12 \div 3 = 4$

2.05.04

VOCABULARY

TERMS	SYMBOLS
divided by separate	÷

GETTING STARTED

Ask three students to stand next to each other. Say, "How many groups of students are standing?" (1 group of 3 students) Ask another group of three students to stand. Say, "How many groups do we have now? (2 groups of 3 students) How many students are standing altogether?" (6) Ask a third group of students to stand. Repeat this procedure until there are 15 students standing. Ask the students to sit in groups of three. Count backwards as these students return to their seats.

Prepare and distribute a card divided into five parts and fifteen counters to each student. Say, "Write 1, 2, 3, 4, 5 in each section. Place three counters on number 1 and three counters on number 2. How many counters did you use? (6) Count your counters by threes." Write 3 + 3 = 6 and 2 x 3 = 6 on the chalkboard. Say, "Clear your card. Cover four sections. How many counters did you use? (12) Count by threes." Write 3 + 3 + 3 + 3 = 12 and 4 x 3 = 12 on the chalkboard.

Repeat this procedure with 15, 9, and 3 counters.

2.05.04

2.05.04.01 **separate up to 15 objects into groups of 3 without a remainder**

STRATEGY 1: Prepare five boxes having 6, 9, 12 or 15 objects. Do not mark the number of objects on the boxes. Arrange the students in groups and give each group a box. Say, "Separate the objects into groups of 3. Select a leader for your group and ask him/her to tell the class how many groups of 3 your group has made. With how many objects did you begin? How many groups did you make? Put the objects back into the boxes and pass them to another group."

STARTEGY 2: Distribute strips of paper with circles drawn in multiples of three through 15 objects, e.g., ●●●●●●●●●●●●●●● . Say, "Separate your circles into groups of three. How many groups of three did you make? With how many circles did you start?"

Repeat this procedure with other strips.

2.05.04.02 **identify the number for a given set (through 15) and tell how many groups of 3 are in that set**

STRATEGY 1: Say, "Freddie works in Charlie Chips Chocolate Factory. His job is to get the correct number of boxes ready for the cookies. Every box holds three cookies. Freddie pulled a lever. Out came fifteen cookies. If Freddie puts three cookies in each box, how many boxes will he need?" Place or draw fifteen discs or circles on the chalkboard. Ask a student to separate the chips into groups of 3.

STRATEGY 1: cont'd Say, "How many groups did he/she make? (5) How many disks are in each group? (3) 15 cookies separated into groups of 3 equals 5 groups of cookies. Freddie pulled the lever again. Out came 12 cookies. How many boxes will he need?" Repeat this procedure for 9, 6 and 3 cookies.

STRATETY 2: Prepare and display up to five dress cutouts and fifteen buttons. Say, "Mrs. Jones is a dressmaker. She has fifteen buttons. She needs three buttons for each dress. How many dresses can she finish?" Ask a student to place three buttons on each dress. Say, "How many dresses can she sew?" (5) Repeat this procedure for 12, 9, 6 and 3 buttons.

2.05.04.03 **solve story problems related to skills learned in this module**

STRATEGY 1: Say, "Jim has nine pencils. He wants to give three pencils to each of his friends. To how many friends can he give pencils?" Ask several students to act out the problem by actually distributing nine pencils. Say, "To how many friends could Jim give pencils?" (3)

Repeat this procedure using other story problems.

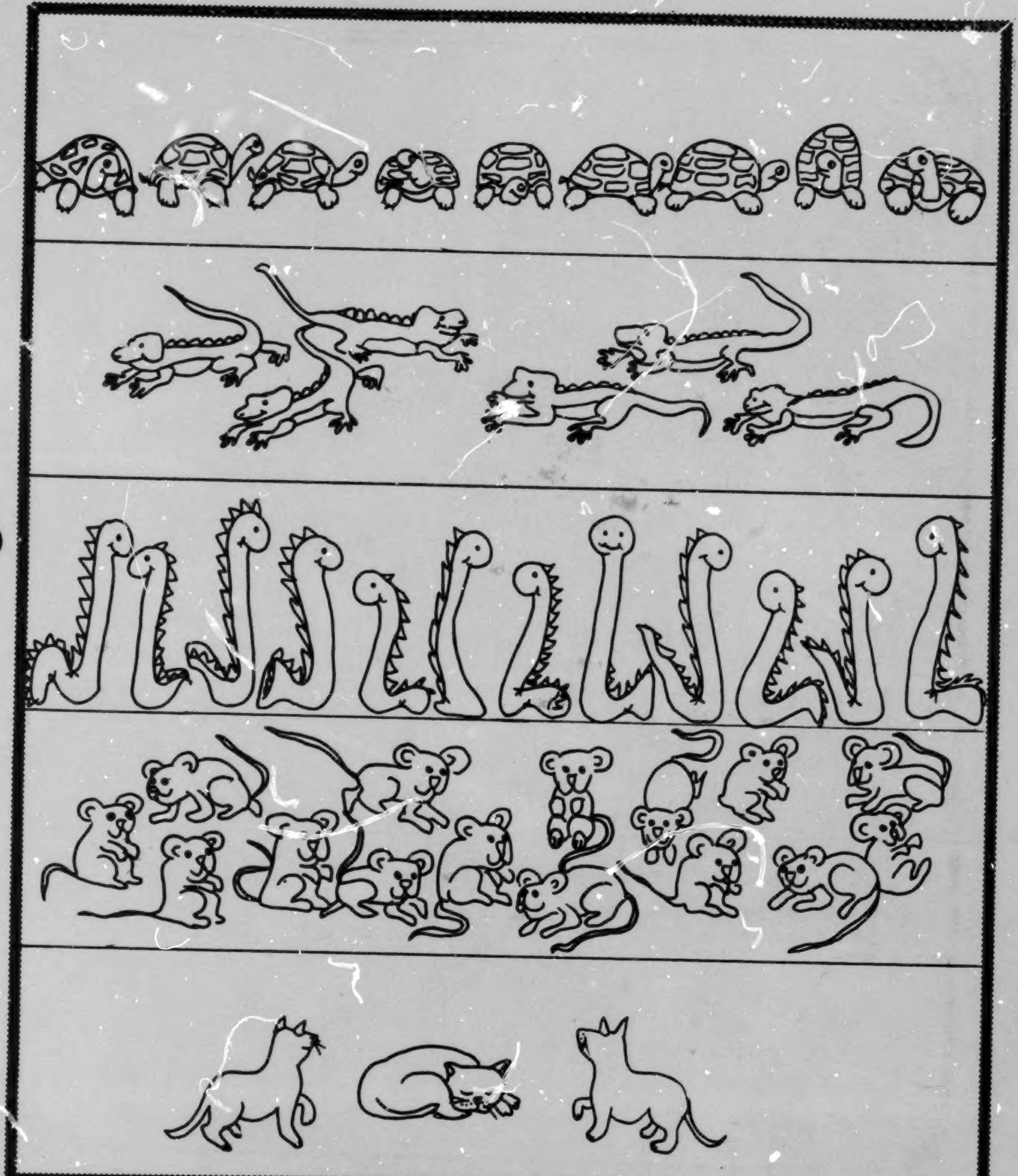
STRATEGY 2: Place twelve magnetic counters on the chalkboard. Say, "Here are twelve wheels. Each tricycle needs three wheels. How many tricycles can be made?" Ask a student to separate the wheels for each tricycle. Say, "How many tricycles can be made?" (4)

Repeat this procedure using other story problems.

P.O. 2.05.04.01

NAME:________________________________CLASS:________DATE:________

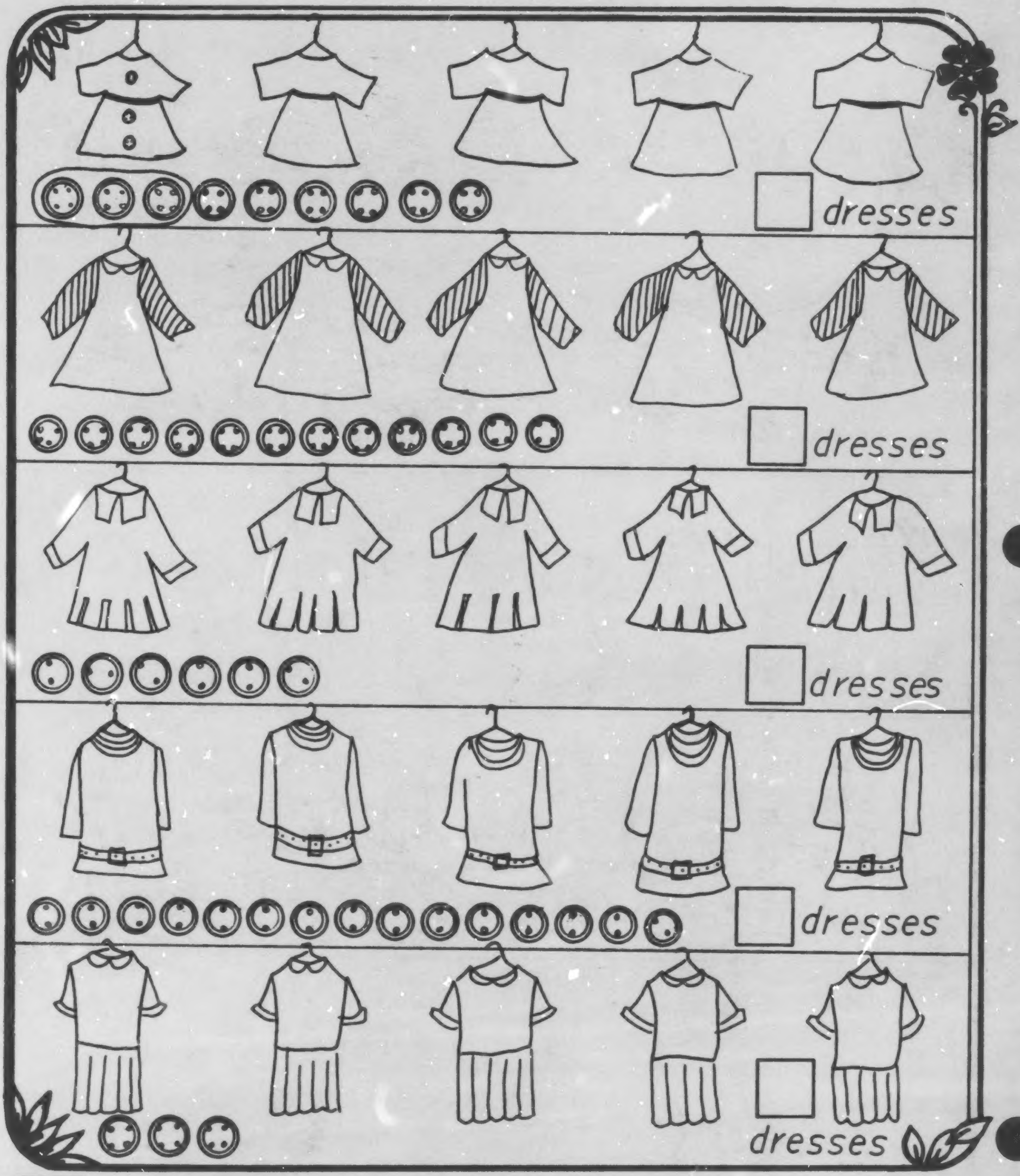
Separate the following objects into groups of 3.



P.O. 2.05.04.02

NAME:______________________________CLASS:__________DATE:________

Put 3 buttons on each dress. How many dresses will have buttons? Write the answer in the box.

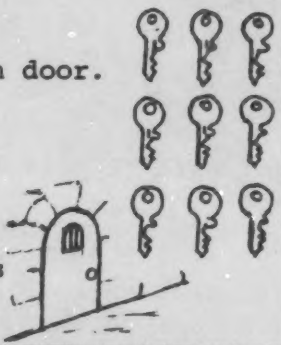

dresses
dresses
dresses
dresses
dresses

P.O. 2.05.04.03

NAME: ______________________ CLASS: __________ DATE: ________

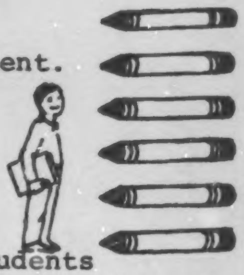
Circle groups of 3. Write the answer to the problem on the line.

9 keys
3 keys for each door.



_________ doors

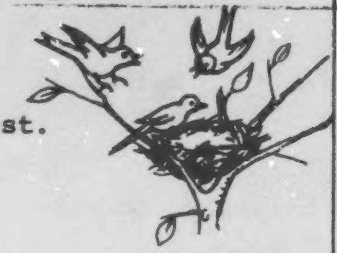
6 crayons
3 for each student.



___________ students

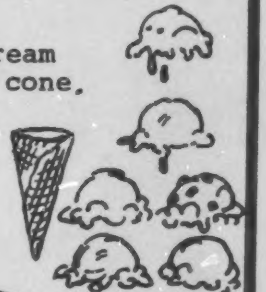
3 birds

3 birds
3 in each nest.

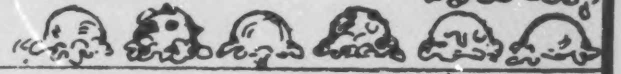


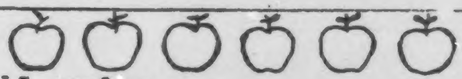
__________ nests

12 scoops of ice cream
3 scoops for each cone.

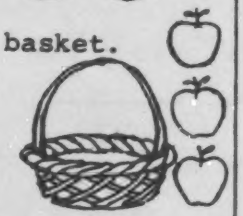


__________cones

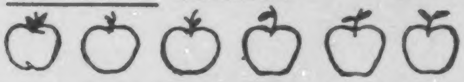




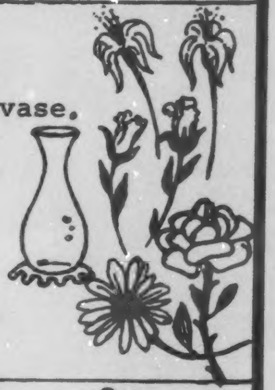
15 apples
3 apples for each basket.



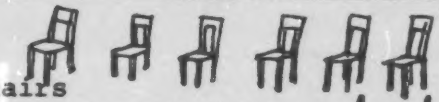
_________ baskets



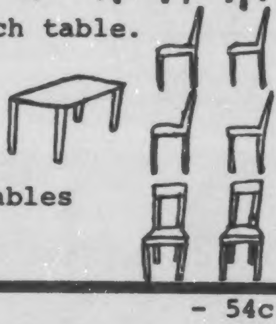
6 flowers
3 flowers in each vase.



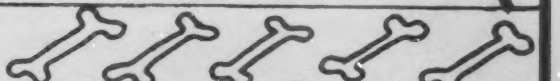
___________vases



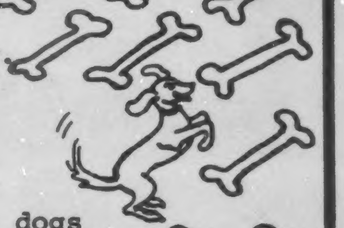
12 chairs
3 chairs at each table.



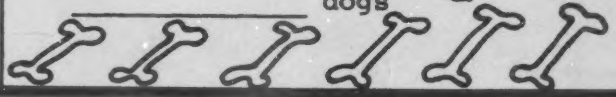
___________ tables



15 bones
3 for each dog.



_____________ dogs



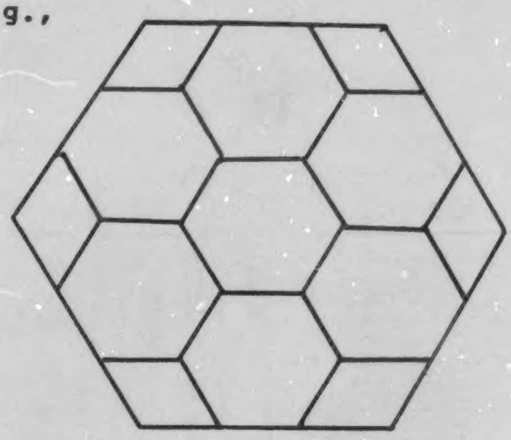
2.09.03 ATTRIBUTES OF THREE-DIMENSIONAL OBJECTS

(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.09.03.01C	compare attributes such as size, shape and weight of common three-dimensional objects; e.g., fruits, balls, cereal boxes
2.09.03.02C	compare attributes such as texture, sliding or rolling properties; e.g., cans, fruit, blocks
2.09.03.03C	recognize shapes that fit without gaps. e.g.,



2.09.03

VOCABULARY

TERMS

attributes

GETTING STARTED

Prepare and display red and blue circles and a small yellow square. Discuss the similarities among these objects. Say, "We often compare things by looking at their size, shape and color. What are other ways in which we compare objects?" Accept all reasonable responses. Discuss the differences among these objects.

Prepare a bag of objects, e.g., cotton, a stone, a sponge, a nail file... Ask the students to reach into the bag and describe how the object feels, e.g., hard, soft, rough...

As a variation, glue objects with various textures to an empty gift wrapping tube, e.g., sandpaper, styrofoam, cotton, fabric, corrugated cardboard... Ask the students to touch each texture and describe how it feels.

2.09.03

2.09.03.01 compare attributes such as size, shape and weight of common three-dimensional objects

STRATEGY 1: Prepare and display an apple, a baseball, and a cereal box. Ask the students to compare these objects in the following ways: shape, size, color, largest/smallest and heaviest/lightest.

STRATEGY 2: Arrange the class into groups of four. Prepare and distribute a box with an orange, a lemon, a can of vegetables, and an oatmeal cereal box to each group. Allow the students to touch and look at the objects. Say, "Which is the smallest/largest? Which is round? How are these objects alike? How are they different?" Discuss how we classify things according to their size, shape and weight.

2.09.03.02 compare attributes such as texture, sliding or rolling properties

STRATEGY 1: Divide the class into groups. Prepare and circulate several trays of cans, fruit and blocks. Say, "Touch these objects. Pick up a can and try to roll it. Does it roll? Can you do this with a block? ...an apple? What kind of objects roll easily? Pick up a piece of fruit and a block. Notice that the fruit is firm but not hard and that the block is hard and has edges."

Ask the students to describe the objects in their own words.

STRATEGY 2: Prepare and display a can, a banana, and a wooden block. Ask the students to describe each object and list the attributes elicited on the chalkboard.

STRATEGY 2:
cont'd

can	banana	block
smooth	smooth	hard
rolls	does not roll	does not roll

Display three other objects and ask the students to describe and compare their attributes.

2.09.03.03 recognize shapes that fit without gaps

STRATEGY 1: Prepare and display several pictures of wall and/or floor patterns made with tiles. Say, "How were the patterns for each picture made? (Various shapes were fitted together to make a pattern.) Do you see any spaces between the shapes? Some shapes will fit together without leaving spaces. Which shapes have been fitted together in each picture?" Write a list of these shapes on the chalkboard, e.g., triangles, squares, hexagons... Demonstrate why circles and ovals cannot be fitted together without gaps.

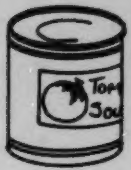
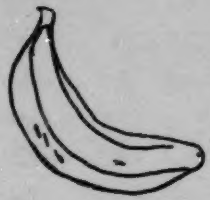
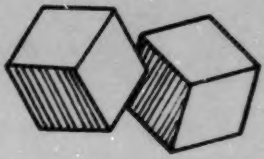
Prepare and distribute construction paper, a pair of scissors and paste. Say, "Cut out shapes that can be fitted together to make a pattern. Paste these shapes together to make your own pattern. Remember to use shapes that fit together without gaps."

STRATEGY 2: Prepare many different magnetized shapes or back each shape with tape. Say, "Fit as many of these shapes together as you can to make a pattern. The shapes must touch each other without leaving any spaces." After the pattern has been completed, say, "Did you use at least one of each type of shape? (No) This is because the circles and ovals could not be fitted together without leaving a space."

P.O. 2.09.03.01.02

NAME:______________________________ CLASS:__________ DATE:________

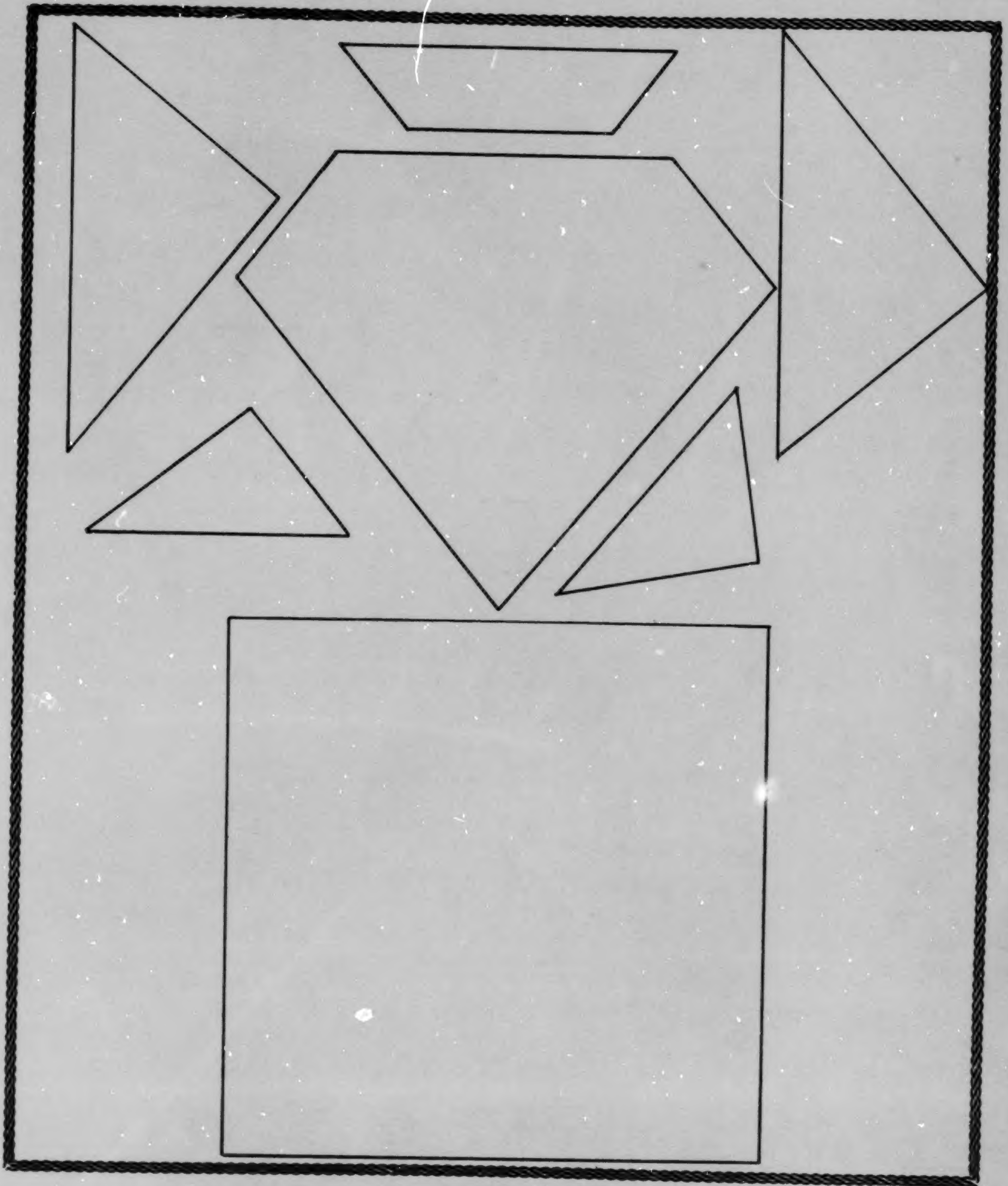
Describe the attributes of each object.

Soup Can	Banana	Blocks
		

P.O. 2.09.03.02

NAME: ______________________ CLASS: __________ DATE: ________

Cut out the shapes. Paste them in the square below. Color each shape a different color.



Unit 49

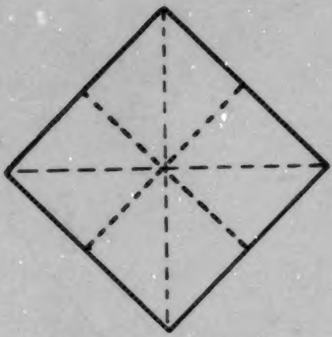
2.09.04 SYMMETRY

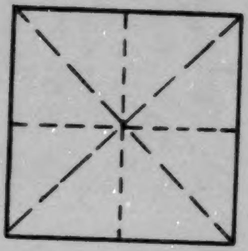
(1 lesson)

PERFORMANCE OBJECTIVES

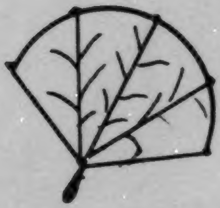
The student will be able to...

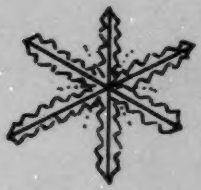
2.09.04.01A find more than one line of symmetry; e.g.,





2.09.04.02A determine whether objects have lines of symmetry.
e.g.,
leaves, snowflakes





VOCABULARY

TERMS

symmetry
square
circle
rectangle
line of symmetry

GETTING STARTED

Prepare and display oak tag circles, squares, triangles and rectangles. Ask the students to identify each shape. Draw a large dot diagram to represent a square geoboard on the chalkboard. Say, "Who can connect the dots on the geoboard to construct a triangle? ...square? ...rectangle? The circle does not have straight sides, therefore, this geoboard could not be used to make a circle."

Prepare and distribute circles, squares, triangles and rectangles, a pair of scissors and construction paper to each student. Point to various objects in the classroom and ask the students to identify the shape of each object. Say, "Trace each shape and then cut it out. We are going to experiment with each shape. Fold your shape in half and then cut along the fold. How many shapes do you now have? See whether the two shapes match up exactly by placing one over the other."

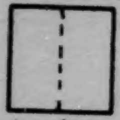
Repeat this activity several times so that each student has an opportunity to experiment with different shapes.

2.09.04

2.09.04.01 **find more than one line of symmetry**

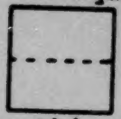
STRATEGY 1: Prepare and display a construction paper square and ask the students to identify the shape. Fold the square in half.

e.g.,



Say, "Into how many equal parts did I fold this square?" Unfold the square and draw a thick line on the fold. Say, "This fold line is called a line of symmetry. A line of symmetry separates a shape or an object into two parts which match exactly." Refold the square and make another fold.

e.g.,



Say, "Is this another line of symmetry?" (Yes) Distribute squares to each student. Say, "Make a line of symmetry. Draw a line on the fold and unfold the square. Practice finding the other lines of symmetry using the same shape. Be sure to draw a line each time the square is folded." Assist the students in finding four lines of symmetry.

STRATEGY 2: Prepare and hold up a large construction paper rectangle. Say, "Who can identify this shape?" Ask a student to fold the rectangle in half. Say, "How many parts do we now have? (2) Are the parts exactly the same?" (Yes) Unfold the shape and direct the students' attention to the fold line. Say, "The fold line is called a line of symmetry because it separates the shape into two parts that are exactly the same." Ask another student to fold the rectangle in another way so that both parts will match exactly. Ask the student to show the

STRATEGY 2: cont'd

line of symmetry. Repeat this procedure with a circle and a triangle. Distribute paper and a pair of scissors to each student. Say, "Experiment making lines of symmetry by folding your paper, cutting out any regular shape, unfolding the shape and drawing a line on the fold."

2.09.04.02 determine whether objects have lines of symmetry

STRATEGY 1: Prepare these shapes: a heart, a butterfly, a Christmas tree, and the letter X. Provide drawing paper and paints. Say, "We have drawn lines of symmetry in circles, squares... Let's see if we can find out if some objects have lines of symmetry." Display each shape on the chalkboard. Select individual students to fold each figure to determine if there is a line of symmetry. Ask the students to point out the fold line in the object.

Ask students to make symmetrical designs. Place a drop of paint in the center of each student's paper. Say, "Fold the paper in half and observe that whatever is on one side, is on the other."

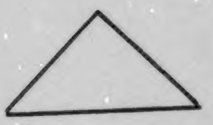
STRATEGY 2: Draw several objects on the chalkboard, e.g., a bone, a star, gloves, a clock, a stop sign, a hand... Point to an object that has a line of symmetry and show the line of symmetry in that object. Ask several students to decide whether or not the objects on the chalkboard have a line(s) of symmetry. If the object has a line of symmetry ask the student to draw over the line in pencil. Make a list of objects in the classroom that have lines of symmetry.

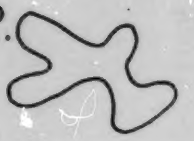
P.O. 2.09.04.01

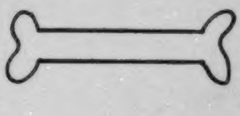
NAME: ______________________ CLASS: __________ DATE: ________

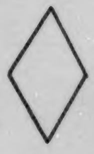
Follow the directions.

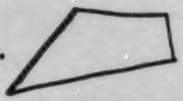
Which designs have lines of symmetry?

1.  yes or no

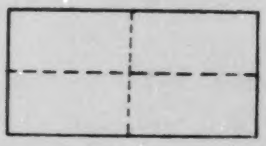
2.  yes or no

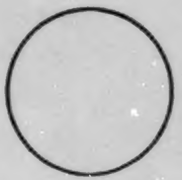
3.  yes or no

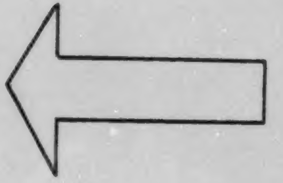
4.  yes or no

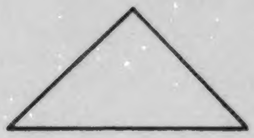
5.  yes or no

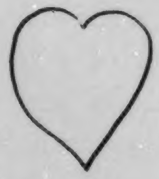
Draw dotted lines to show a line(s) of symmetry in each shape.

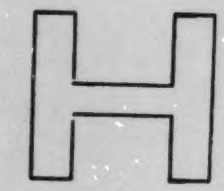
1. 

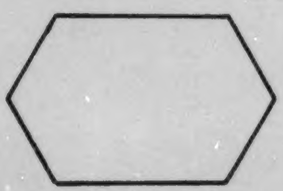
2. 

3. 

4. 

5. 

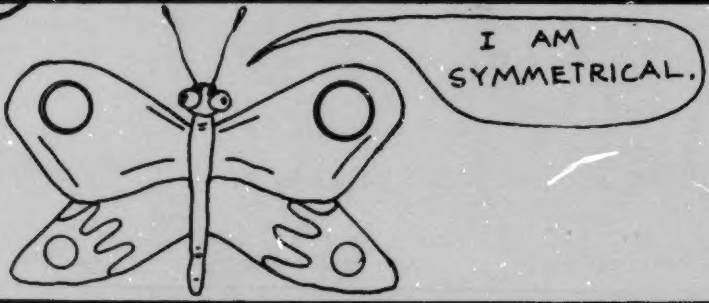
6. 

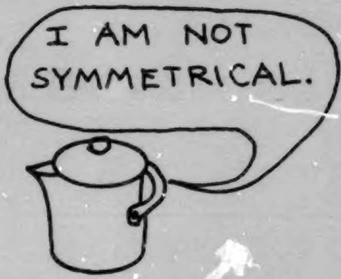
7. 

P.O. 2.09.04.02

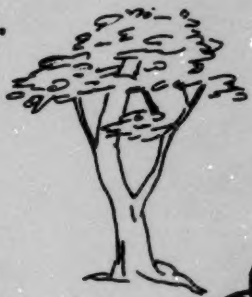
NAME: ______________________ CLASS: ________ DATE: ______

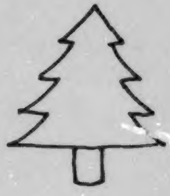
Follow the directions.

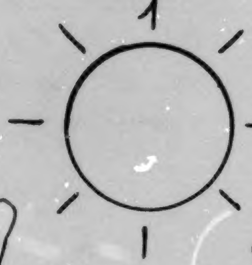

I AM SYMMETRICAL.

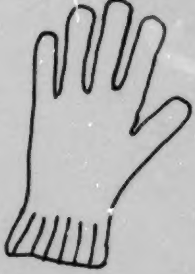

I AM NOT SYMMETRICAL.

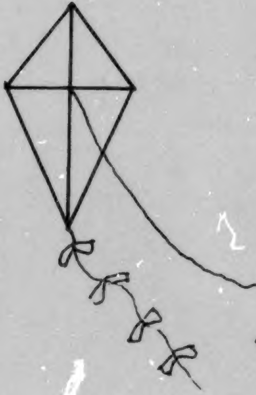
Put an X on the objects that have lines of symmetry.

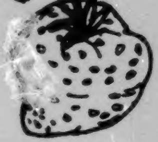


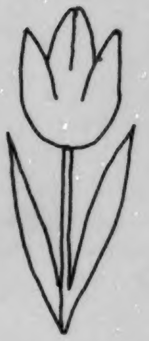


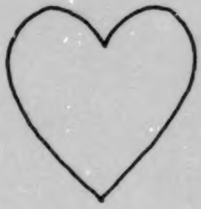


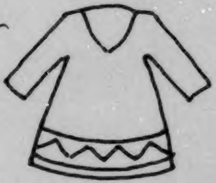


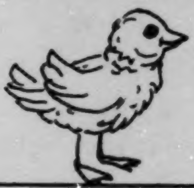




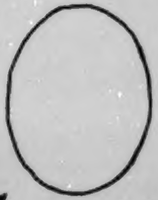


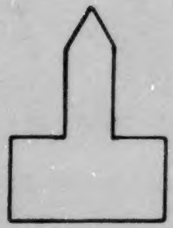


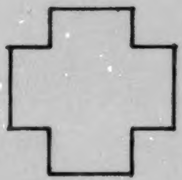




Draw a line of symmetry in each shape.







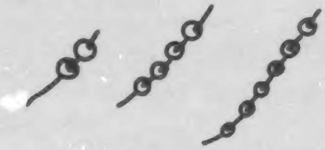
2.13.04 PATTERNS

(2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.13.04.01A complete a picture pattern and state the rule;
e.g.,



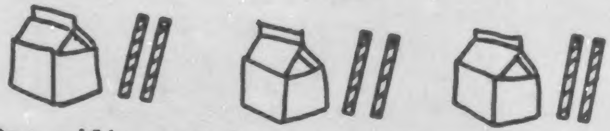
Rule: Add two more beads to each successive string.

2.13.04.02A complete a numerical pattern and state the rule;
e.g.,

1 3 5 7 ☐ Rule: Add two to the previous number.

10 8 6 4 ☐ Rule: Subtract two from the previous number.

2.13.04.03A create and explain a pattern given concrete material.
e.g.,



"One milk container and two straws..."

2.13.04

VOCABULARY

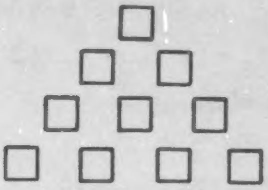
TERMS

pattern
rule

GETTING STARTED

Prepare a flannel board and 21 flannel squares of equal size. Place a square near the top of the flannel board. Say, "How many squares do you see?" (one) Place two squares underneath and say, "How much is one and one more?" (2)

e.g.,



Place three squares under the two strips and say, "How much is two and one more?" (3) Continue with this procedure of adding squares until you reach six. The students should see a developing step pattern by adding one more square each time.

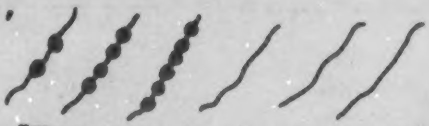
Prepare and distribute red, blue, and yellow blocks to each student.

Display a line of blocks in the following order: red, blue, yellow, red, blue, yellow. Say, "What color block should go next? (red) Place a blue, red and yellow block in a straight line on your desk. Repeat this pattern with the same order of colors." Ask students to create their own block patterns.

2.13.04

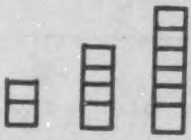
2.13.04.01 **complete a picture pattern and state the rule**

STRATEGY 1: Duplicate the following pictures and distribute a copy to each student.
e.g.,



Say, "How many beads are on the first string? ...the second? ...the third? How many beads were added to the second string to get four beads? How many beads were added to the third string to get six? If we add two each time, how many beads will be on the fourth string? Draw six beads and two more in order to get eight beads. How many beads will be on the next string? What would you say the rule is for finishing this pattern? (Add two more beads to each successive string.) Finish the patterns on your sheet."

STRATEGY 2: Prepare and distribute thirty interlocking cubes to each student. Draw this pattern on a chart.
e.g.,



Say, "Use your cubes to show this block pattern on your desk. Can anyone tell us what the rule is for each column? (Adding two.) Make the next column in this pattern with your cubes. Continue this pattern as many times as possible."

Repeat this procedure with other patterns.

2.13.04.02 **complete a numerical pattern and state the rule**

STRATEGY 1: Write the following numbers on an experience chart.
e.g.,

3 6 9 12 ___ ___

STRATEGY 1: cont'd

Distribute counting objects. Say, "Show 3, 6, 9, and 12 objects on your desk. How many were added to each number to get the next number in the pattern? The rule for this pattern is to add 3 to each number. Complete the above pattern." Repeat this procedure with the following pattern: 1, 3, 5, 7, ___.

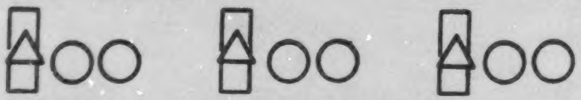
STRATEGY 2:

Display the following pattern: 10, 8, 6, 4, ___. Ask a student to read the numbers. Say, "Do the numbers go from higher to lower or from lower to higher? From 10 to 8 is how much lower? From 8 to 6 is how much lower? Who can state the rule for this pattern?" (Subtract 2) Repeat this procedure using this pattern: 15, 12, 9, 6, ___.

2.13.04.03 **create and explain a pattern given concrete material**

STRATEGY 1:

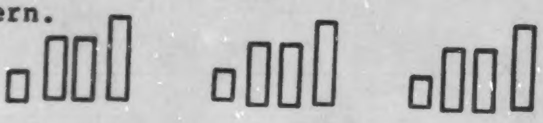
Prepare and distribute straws and pre-cut circles to each student. Display the following pattern on a flannel board.



Say, "Who can explain this pattern? (one triangle, two circles, one triangle, two circles ...) A pattern must always follow a rule. Use your straws and circles to make patterns." Ask various students to show and explain their patterns.

STRATEGY 2:

Prepare and distribute colored rods to each student. Ask the students to explain the following pattern.

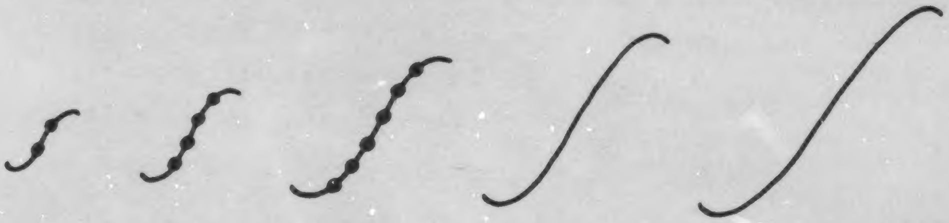


Say, "A pattern always follows a rule. Use your rods to make various patterns. Explain your pattern and state your rule."

P.O. 2.13.04.01

NAME: ______________________ CLASS: ________ DATE: ________

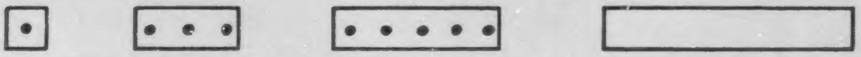
Finish the pattern and state the rule.



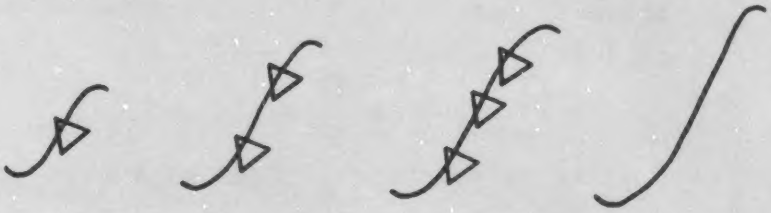
The rule is ______________________.

△△△□□□○○○△△□□○○△□ ____

The rule is ______________________.



The rule is ______________________.



The rule is ______________________.

P.O. 2.13.04.02

NAME: ______________________ CLASS: ________ DATE: ________

Complete the pattern and state the rule.

15, 12, 9, 6 ☐

State the rule ______________

20, 22, 24, 26, ☐

State the rule ______________

1, 3, 5, 7, ☐

State the rule ______________

20, 15, 10 ☐

State the rule ______________

10, 20, 30, 40, 50, ☐

State the rule ______________

P.O. 2.13.04.03

NAME: ________________________ CLASS: __________ DATE: ________

Draw a pattern in each box. State your rule.

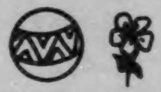
2.12.04 ARRANGEMENTS OF 2 THROUGH 5 ITEMS

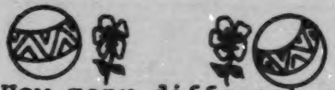
(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.12.04.01B make arrangements of 2 through 5 items using all the items;
e.g.,



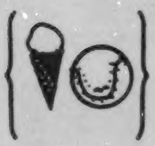


How many different ways could you arrange the ball and the flower?

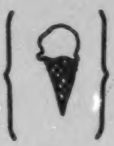
2.12.04.02B define and identify subsets of a given set of objects;
e.g.,

These are some subsets of SET A.

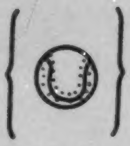
Set A



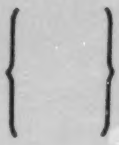
Set B



Set C



Set D

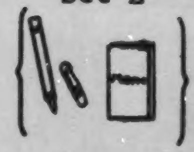


Sets A,B,C,and D are subsets of Set A.

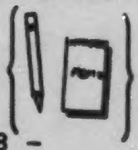
2.12.04.03B make subsets of one or two objects from sets of three or four concrete objects.
e.g.,

These are some subsets of Set E.

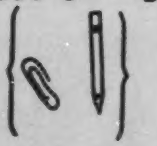
Set E



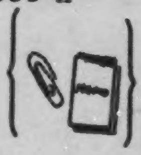
Set F



Set G



Set H



VOCABULARY

TERMS

sets
subsets
arrangements

GETTING STARTED

Prepare and distribute to each student eight interlocking blocks of which five are blue. Say, "Pick up all the blue blocks. You have a set of five blue blocks. Pick up a red block. Is it a member of this set of blue blocks? (No) Does a yellow block belong in this blue set?" (No)

Place two chairs in the front of the room. Choose two students to stand in front of the room. Say, "Who can name two sets from the objects in front of the room? (Chairs and students.) Do the sets have an equal number of objects? We need someone to match the two sets." Ask the students to sit on the chairs. Say, "Are there any chairs left empty? Are the two sets equal? These sets are equal because they contain the same number of elements."

2.12.04

2.12.04.01 **make arrangements of 2 through 5 items using all the items**

STRATEGY 1: Prepare and display a flannel board with six cutouts of each letter T, O, and N. Say, "We want to arrange these letters in many ways. Who can give us an arrangement?" Possibilities include the following arrangements.

TON TNO OTN
ONT NTO NOT

Note: Each letter is used twice in 1st, 2nd and 3rd letter position.

Say, "How many arrangements were we able to make? (6) How many of these arrangements are words?" (2 - NOT and TON)

Repeat this procedure with cutouts of an apple, a ball, and a flower on a flannel board. Discuss all possible arrangements.

STRATEGY 2: Prepare and distribute paste, a large piece of construction paper and paper shapes of a circle, a triangle, and a square. Six of each shape are needed. Say, "Arrange the shapes in as many ways as you can on your construction paper." Allow time for exploration and then discuss all possible arrangements.

2.12.04.02 **define and identify subsets of a given set of objects**

STRATEGY 1: Prepare and distribute a magazine and a pair of scissors to each student. Say, "Cut out two different objects from your magazine." Collect these pictures, mount them on individual cards, and display them. These objects are Set A. Who can name the objects in Set A? If all the members of another set are also members of Set A, then the other set(s) is a subset of Set A. Let's make subsets using one or more cards from Set A."

STRATEGY 2: Say, "How many students are in this classroom? Who can name the set? (A set of students.) Will all of the boys please stand up. Who can name the set? (A set of boys.) The set of boys is a subset of the set of students." Repeat this procedure using the set of girls as a subset of the set of students.

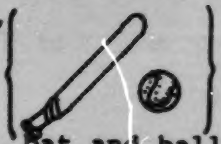
2.12.04.03 **make subsets of one or two objects from sets of three or four concrete objects**

STRATEGY 1: Prepare and distribute a set of red, yellow and blue blocks to each student. Say, "You have one set of three blocks. Please make a subset using only two blocks - the red and blue." Write red and blue on the chalkboard.

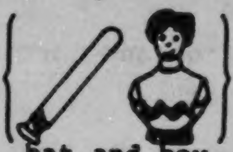
Repeat this procedure to make the following subsets: red and yellow, yellow and blue, and blue and yellow. Be sure that the students recognize that these subsets are within the larger set of red, blue and yellow.

STRATEGY 2: Place felt cutouts of a bat, a ball and a boy on a flannel board. Say, "How many objects are in this set? What are they? Who can help us make a subset using only two of these objects?"

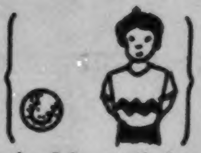
e.g.,



bat and ball



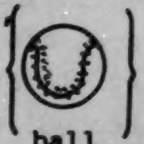
bat and boy



ball and boy

Say, "Who can make a different (smaller) subset from the larger set?"

e.g.,



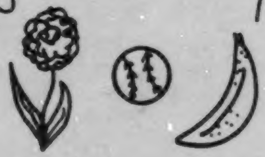
ball

Repeat this procedure with other objects.

P.O. 2.12.04.01

NAME: ______________________________ CLASS: __________ DATE: ________

Make as many arrangements as you can using these three pictures:

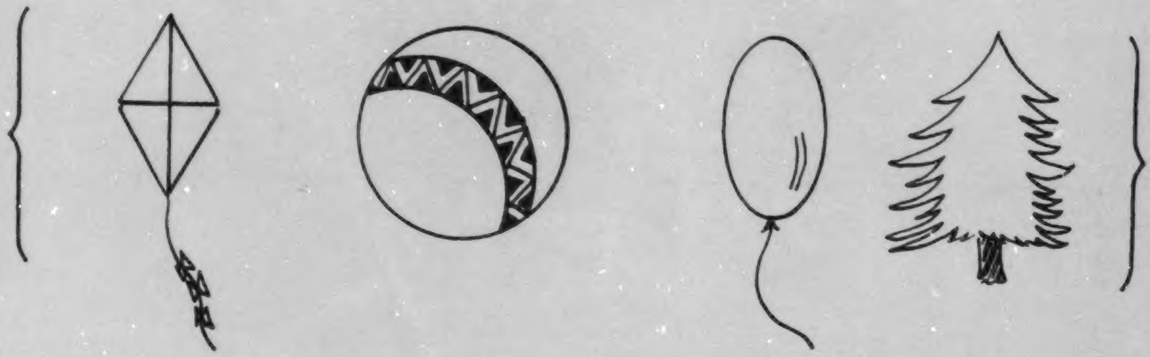


Use the letters **MOV** to make six different letter arrangements. Use each letter only once in each arrangement.

P.O. 2.12.04.02

NAME:______________________________ CLASS:__________ DATE:________

Draw a subset in each bracket.



A

{ }

B

{ }

C

{ }

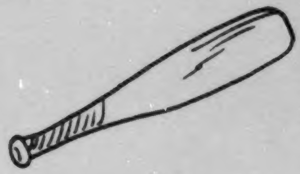
D

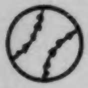
{ }

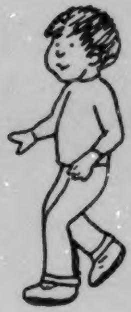
P.O. 2.12.04.03

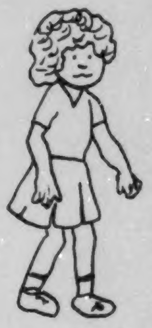
NAME:____________________ CLASS:________ DATE:________

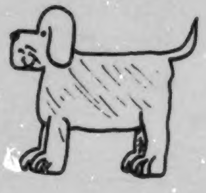
Use the three pictures to make 3 new groups with only two in each group.

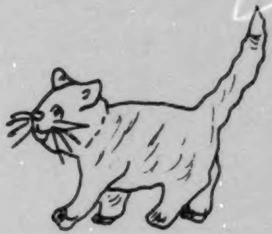












2.02.06 ADDITION OF 2-DIGIT AND 3-DIGIT NUMBERS WITH REGROUPING (ONES TO TENS)

(2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.02.06.01B add a 3-digit number and a 2-digit number with regrouping (exchanging) using expanded notation;

e.g.,

$$\begin{array}{rrrrrrrrr}
469 & = & 400 & + & 60 & + & 9 & & \\
+\ 27 & = & & & 20 & + & 7 & & \\
\hline
 & & 400 & + & 80 & + & 16 & = & \\
 & & 400 & + & 90 & + & 6 & = & 496
\end{array}$$

2.02.06.02B add a 3-digit number and a 2-digit number with regrouping (exchanging) and check;

e.g.,

$$\begin{array}{r}
469 \\
+\ 27 \\
\hline
496
\end{array}
\qquad\qquad
\begin{array}{r}
\underline{\text{check}} \\
27 \\
+469 \\
\hline
496
\end{array}$$

2.02.06.03B compute addition examples using numbers through \$9.99 and check;

e.g.,

$$\begin{array}{r}
\$1.26 \\
+\ .48 \\
\hline
\$1.74
\end{array}
\qquad\qquad
\begin{array}{r}
\underline{\text{check}} \\
\$\ .48 \\
1.26 \\
\hline
\$1.74
\end{array}$$

2.02.06.04B solve story problems related to skills learned in this module.

e.g., Mary had 126 marbles. Susan had 48 marbles. How many marbles did the girls have in all?

$$\begin{array}{r}
126 \\
+\ 48 \\
\hline
174
\end{array}\ \text{marbles}$$

2.02.06

VOCABULARY

TERMS

regrouping
digit
sum
total

GETTING STARTED

Prepare and display two bundles of ten sticks and five single sticks (25), and three bundles of ten and eight single sticks (38). Write this example on the chalkboard.

e.g.,

$$\begin{array}{rl} 25 = & 2 \text{ tens} + 5 \text{ ones} \\ \underline{+38 =} & \underline{3 \text{ tens} + 8 \text{ ones}} \end{array}$$

Say, "How many ones are there altogether? (5 + 8 = 13) Can we regroup the 13 ones? (We can make another group of 10.) Now how many tens do we have? (6) How many ones do we have?" (3) Write the answer 6 tens + 3 ones (63) on the chalkboard.

Repeat this procedure using other examples.

Say, "Ms. Long made 36 brownies and 15 chocolate chip cookies for the party. How many cookies did she make?" Write $\begin{array}{r} 36 \\ \underline{+15} \end{array}$ on the chalkboard. Say, "What do we add first? (The ones column) How many ones are there? (11) Can we write 11 in the ones column? What can we do? (Put 1 in the ones column and regroup 10 ones for one ten which is placed in the tens column.) What will we do next? (Add the tens in the tens column.) How many tens are there? (5) What is the total number of cookies that Ms. Long made?" (51)

Repeat this procedure using other story problems.

2.02.06

2.02.06.01 add a 3-digit and a 2-digit number with regrouping using expanded notation

STRATEGY 1: Prepare and distribute a hundred square, tens strips and units of squared material to each student. Write the following on the chalkboard.

148 = __hundred + __tens + __ones
+43 = __hundred + __tens + __ones
__hundred + __tens + __ones

Ask a student to write 148 in expanded notation. Ask the students to display 148 in squared material on their desks. Repeat the procedure for 43. Ask the students to add the units. Say, "How many ones are there? (11) tens? (9) hundreds? (1) Can we leave 11 ones? How can we regroup these ones? Exchange the ten ones for one ten strip." Continue the addition with the squared material while you write the example on the chalkboard.

Repeat this procedure using other examples.

STRATEGY 2: Display one set of yellow (hundreds), one set of green (tens), and one set of blue (ones) cards with the digits 1 through 9 on the chalkboard ledge. Write the following on the chalkboard.

124 = __ + __ + __
+68 = __ + __ + __

Ask several students to select the cards which represent each number. Say, "If we want to add these numbers what will we do first? (Add the ones column.) Add the two blue cards (4 + 8). How many ones are there? Can we write 12 in the ones column? What must we do?" (Regroup 12 into 1 ten and 2 ones.) Select a blue card and place it in the ones column and a green 1 card and place it

STRATEGY 2:
cont'd

above the tens column. Say, "What will we add next? (The tens column.) Add the green cards (1 + 2 + 6). How many tens are there?" (9) Ask a student to select a green card with the number 9 and place it in the tens column. Say, "Now what should we do? (Add the hundreds column.) How many hundreds do we have?" Ask a student to select a yellow number 1 card and place it in the hundreds column. Ask another student to read the answer.

Repeat this procedure using other examples in which you must regroup ones for tens.

2.02.06.02 **add a 3-digit and a 2-digit number with regrouping**

STRATEGY 1:

Write $\begin{array}{r}469\\ \underline{+27}\end{array}$ on the chalkboard. Ask a student to add the example. Say, "How many ones are there? Is the total number of ones more than 10? How can we regroup 16?" (1 ten + 6 ones) Ask a student to do this on the chalkboard. Say, "How many tens are there?" (1 + 6 + 2) Ask another student to write 9 below the tens column. Say, "What do we do to the hundreds column?" (Bring down the 4.) Read your answer. (496)

Repeat this procedure using other examples.

STRATEGY 2:

Say, "Mr. Brown is a bird watcher. He saw 113 birds on Monday and 68 birds on Tuesday. How many birds did he see altogether?" Ask a student to write the example which solves this problem. Say, "What do we do first to solve the problem? (Add the ones column.) How much is 3 + 8? Can we write 11 in the ones place? How can we regroup 11? (1 ten + 1 one) Write 1 in the ones column and 1 above the tens column. What do we add next? (The tens column) How much is 1 + 1 + 6? Write 8 in the tens

STRATEGY 2: cont'd

column. What do we do last? (Add the hundreds column.) How many birds did Mr. Brown see?" (181)

Repeat the procedure using other examples.

2.02.06.03 **compute addition examples using numbers through $9.99**

STRATEGY 1: Set up a grocery store using empty cans and boxes. Write the price on each item. Ask a student to buy two items and bring the items to a cashier. The cashier reads each price aloud so that another student can write the amounts on the chalkboard. Remind the student at the chalkboard to include the dollar sign and decimal point. Ask a student to compute the addition problem on the chalkboard. Repeat this procedure with other items so that many students can take turns as buyers, cashiers, and computers.

STRATEGY 2: Prepare and display magazine pictures of various food items with price tags. Prepare a set of cards with the total price of any two items written on each card. Say, "We are going to see if we are smart shoppers." Ask a student to take a card from the pile and then select two items from the store which will equal the amount on the card. Ask another student to record the amounts on the chalkboard. Say, "What is the total of the two items that were selected? Does this amount match the amount on the card she selected?" Repeat this procedure with other card selections.

2.02.06.04 **solve story problems related to skills learned in this module**

STRATEGY 1: Display the following table.

	Boys	Girls
Third Grade Classes	139	126
Second Grade Classes	155	128

Say, "We are going to pretend to visit a very large school called the Maple Street School. What does the table show us? Take out your notebook and copy the table. Use the table to answer these questions. How many students are in third grade classes? How many students are in second grade classes? How many boys are there in the second and third grade? How many girls are there in the second and third grade?" Ask several students to show their work on the chalkboard.

Repeat this procedure using other tables.

STRATEGY 2: Write the following problem on the chalkboard.

> Donald's sold 125 hamburgers and 48 cheeseburgers on Monday. How many burgers did they sell altogether?

Ask a student to read the problem. Say, "What do we know in this problem?" (The number of hamburgers and cheeseburgers.) Write hamburgers 125 and cheeseburgers 48 on the chalkboard.

Say, "What are we going to do to find the answer? (add) What will we add first? (Add the one's column.) How many ones are there? (13) What must we do with the 13 ones? (regroup into 1 ten and 3 ones) What do we add next? How many tens are there? (7) Now what will we add? How many hundreds are there? (1) How many burgers were sold?" (173 burgers)

Repeat this procedure using other story problems.

P.O. 2.02.06.01

NAME: ______________________ CLASS: ________ DATE: ________

Solve each example using expanded notation.

Think and Solve by Expanding

$$\begin{array}{rcr} 165 & = & 100 + 60 + 5 \\ +\ 18 & = & +\ \ \ \ 10 + 8 \\ \hline & & 100 + 70 + 13 \\ & & 100 + 80 + 3 = 183 \end{array}$$

$$\begin{array}{r} 237 \\ +\ 46 \\ \hline \end{array}$$

$$\begin{array}{r} 619 \\ +74 \\ \hline \end{array}$$

$$\begin{array}{r} 328 \\ +265 \\ \hline \end{array}$$

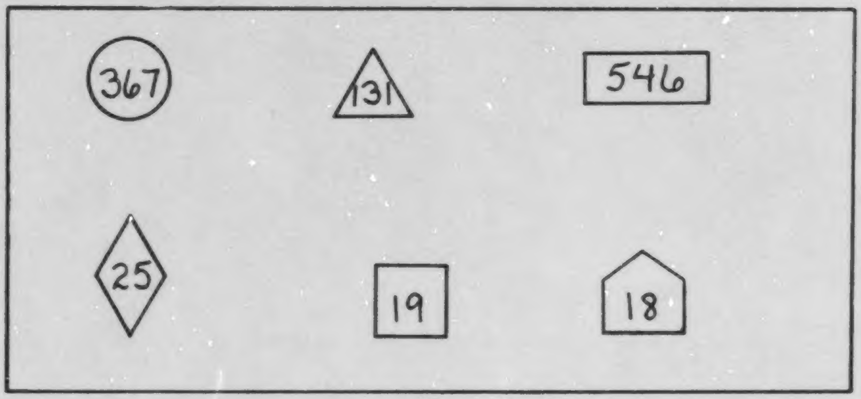
$$\begin{array}{r} 744 \\ +127 \\ \hline \end{array}$$

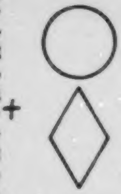
476

P.O. 2.02.06.02

NAME:______________________________________CLASS:__________DATE:________

Break the secret code. Be sure to show the regrouping when you add. Check your work.


367
131
546
25
19
18

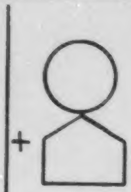


= 367

= + 25

392

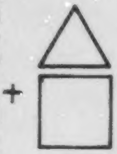
check



=

= +

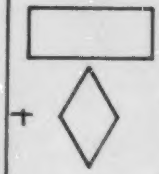
check



=

= +

check



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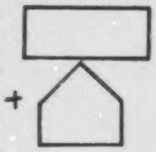
check



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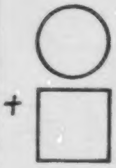
= +

check



=

= +

check

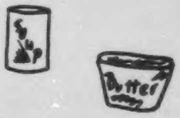
P.O. 2.02.06.03

NAME: ______________________ CLASS: ________ DATE: ________

Write the name of the items next to their prices. Add to find the amount. Be sure to show the regrouping. Check your answers.

Price List

Bread	$1.19	Soda	.55
Milk	$1.26	Eggs	.69
Coffee	$2.39	Butter	.47
Meat	$3.45	Soup	.29



$1.19 Bread
+ .69 Eggs
$1.88
check

$2.39 ________
+ .55 ________
check

$1.26 ________
+ .29 ________
check

$1.19 ________
+ .47 ________
check

$2.39 ________
+ .47 ________
check

$3.45 ________
+ .29 ________
check

$3.45 ________
+ .47 ________
check

$1.26 ________
+ .55 ________
check

P.O. 2.02.06.04

NAME:____CLASS:__________DATE:_______

Solve each story problem. Be sure to show your work
Check your answer.

DOG AND CAT POUND

Dogs - 29
Cats - 67
Total 96

Central Park has 115 oak trees and 87 maple trees. How many trees are there in all?

I counted 113 stars last night. My brother counted 77. How many did we count altogether?

My reading book has 24 pages. My math book has 168 pages. How many pages are there in both books?

Maria saw 154 roses and 29 daises at the Botanical Gardens. How many flowers did she see in all?

Mother went toy shopping. She bought a dolls hat for $3.09 and a purse for $.87. How much did she spend altogether?

I bought a notebook for $1.57 and a box of crayons for $.39. How much did I spend altogether?

Unit 53

2.02.07 COMMUTATIVE AND ASSOCIATIVE PROPERTIES OF ADDITION THROUGH 999

(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.02.07.01B use the commutative property of addition using numbers through 999;
e.g.,

$$\begin{array}{r} 123 \\ +321 \\ \hline 444 \end{array} \quad \rightleftarrows \quad \begin{array}{r} 321 \\ +123 \\ \hline 444 \end{array}$$

2.02.07.02B discover patterns the commutative property makes in tables;
e.g.,

+	1	2	3	4	5	6	7	8	9
1		3							
2	3	4	5	6	7	8	9	10	11
3		5							
4		6							
5		7							
6		8							
7		9							
8		10							
9		11							

2.02.07.03C use the associative property of addition using numbers through 999.
e.g.,

$$(200 + 30) + 6 = 200 + (30 + 6)$$

2.02.07

VOCABULARY

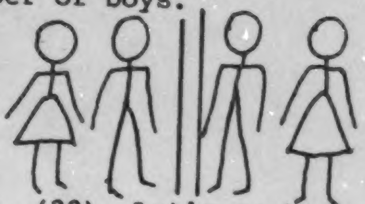
TERMS

commutative property
associative property

GETTING STARTED

Draw two sets of stick figures - a girl and a boy on one side and a boy and a girl on the other side. Say, "Who can tell us how many girls are in our class?" Write the number under both stick figure girls. Repeat this procedure for the number of boys.

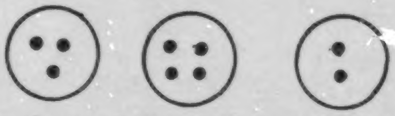
e.g.,



Say, "How many students are in this class? (28) Let's go back and add the numbers under each set. (13 + 15 = 28 and 15 + 13 = 28) Did the order of the numbers change the sum?"

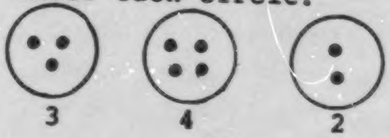
Display nine magnetic discs on the chalkboard. Draw three large circles and have individual students place the nine discs into the three circles.

e.g.,



After the discs have been placed, ask the students to write the correct number under each circle.

e.g.,



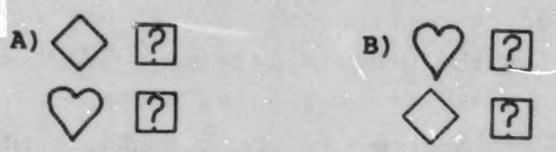
Say, "Add the numbers 3 + 4 + 2. What is the sum?" (9) Ask another student to rearrange the discs and add them again. Say, "Does the sum change if the order changes?"

2.02.07

2.02.07.01 use the commutative property of addition using numbers through 999

STRATEGY 1: Write the numbers ◇33, ♡12, □42, △26 and ○51 on twenty cards. Distribute the cards to twenty students. Draw this diagram on the chalkboard.

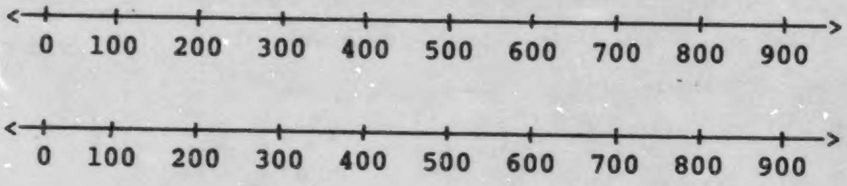
e.g.,



Point to the shape with 33 and say, "Who has a card that matches the number inside the diamond? Place your card in the space marked [?] next to the ◇." Repeat this procedure for the ♡. Say, "How much is 33 and 12?" Repeat this procedure for column B. Say, "Did the order in which we added the numbers change the sum?" Repeat this procedure using other numbers.

STRATEGY 2: Display two number lines labeled 0 through 900.

e.g.,



Prepare two animal pictures, e.g., a dog and cat. Place the dog on the number 200 on the first number line and the cat on the number 300 on the second number line. Say, "These animals had a race. They both started at 0. How many feet did the dog run? (200 feet) How far did the cat run? (300 feet) How many feet did the cat and dog run altogether? Who can write a number sentence to help us answer this problem? (300 + 200 =) Add the numbers."

STRATEGY 2: cont'd

Remove the animals from the number lines. Repeat the procedure using the cat (300 feet) first and the dog (200 feet) second. Say, "The total distance ran remained the same even though the order of the numbers was changed."

Repeat this procedure using other numbers.

2.02.07.02 **discover patterns the commutative property makes in tables**

STRATEGY 1: Draw an addition table on the chalkboard.
e.g.,

+	1	2	3	4	5
1					
2					
3					
4					
5					

Say, "An addition table is used to locate the sum of numbers." Demonstrate by completing the table with the class. Write the problems 1 + 2 = and 2 + 1 = ☐ on the chalkboard. Say, "What is the answer to each example? Outline the answer for each problem in the table in red." Repeat the procedure with 1 + 3 and 3 + 1. Outline the answer in blue. Say, "What do you notice about these examples? (Each pair of numbers has the same sum.) Do you see a pattern developing on our addition table?" (The sums form a diagonal pattern.) Repeat this activity using other pairs of numbers, e.g., 1 + 4, 4 + 1; 2 + 3, 3 + 2.

2.02.07

STRATEGY 2: Prepare and display five of each of these shapes: triangle, square, circle, diamond, cut from oak tag and backed with tape. Draw an addition table and this chart on the chalkboard.

e.g.,

+	1	2	3	4	5
1					
2					
3					
4					
5					

3 = ○ 5 = △

4 = □ 6 = ◇

Complete the table with the students. Write the problems 1 + 2 = □ and 2 + 1 = □ on the chalkboard. Say, "Who can solve these problems? Did changing the order of the addends change the sum? Look at the number and shape chart. Which shape matches the sum of 2 + 1 and 1 + 2? (circle) Place a circle in the appropriate squares in the table." Repeat this procedure with 3 + 1 and 1 + 3. Help the students to observe that each pair of numbers with the same sum have the same shape over it. Point out the diagonal pattern formed by each pair of numbers.

Repeat the activity using other pairs of numbers.

2.02.07.03 **use the associative property of addition using numbers through 999**

STRATEGY 1: Prepare two sets of oak tag cards labeled 1 through 9 and 10 through 90 and four cards with the symbols $\boxed{+}$ (plus), $\boxed{=}$ (equal) and $\boxed{(}\,\boxed{)}$ (parentheses). Ask a student to hold up a card with the symbol (+). What is the meaning of this symbol?" Repeat this procedure until students are holding the following cards, 10 + 20 + 5. Ask

STRATEGY 1: con't several students to choose other cards to make the same number sentence. Hold up and identify the parenthesis symbol. Ask four students to hold the "()" cards in the following places: (10 + 20) + 5, and 10 + (20 + 5). Say, "These symbols tell us which numbers to add first. In the example (10 + 20) + 5 which numbers do we add first? (10 + 20) In the example 10 + (20 + 5) which numbers are added first? (20 + 5) What is the sum of each example? (35) When we add three numbers, we can add them in any order and the sum does not change."

Repeat this procedure using other examples.

STRATEGY 2: Prepare and display 15 stacking cubes in three colors, e.g., red, yellow, and green. Say, "Each cube will equal one hundred. (Join two yellow cubes.) What do these cubes equal?" (200) Join four red cubes and three green cubes and repeat this procedure. Say, "We are going to find the sum of the three groups of cubes. What number sentence can we write to solve our problem?"

e.g.,

Y Y + R R R R + G G G = 200 + 400 + 300

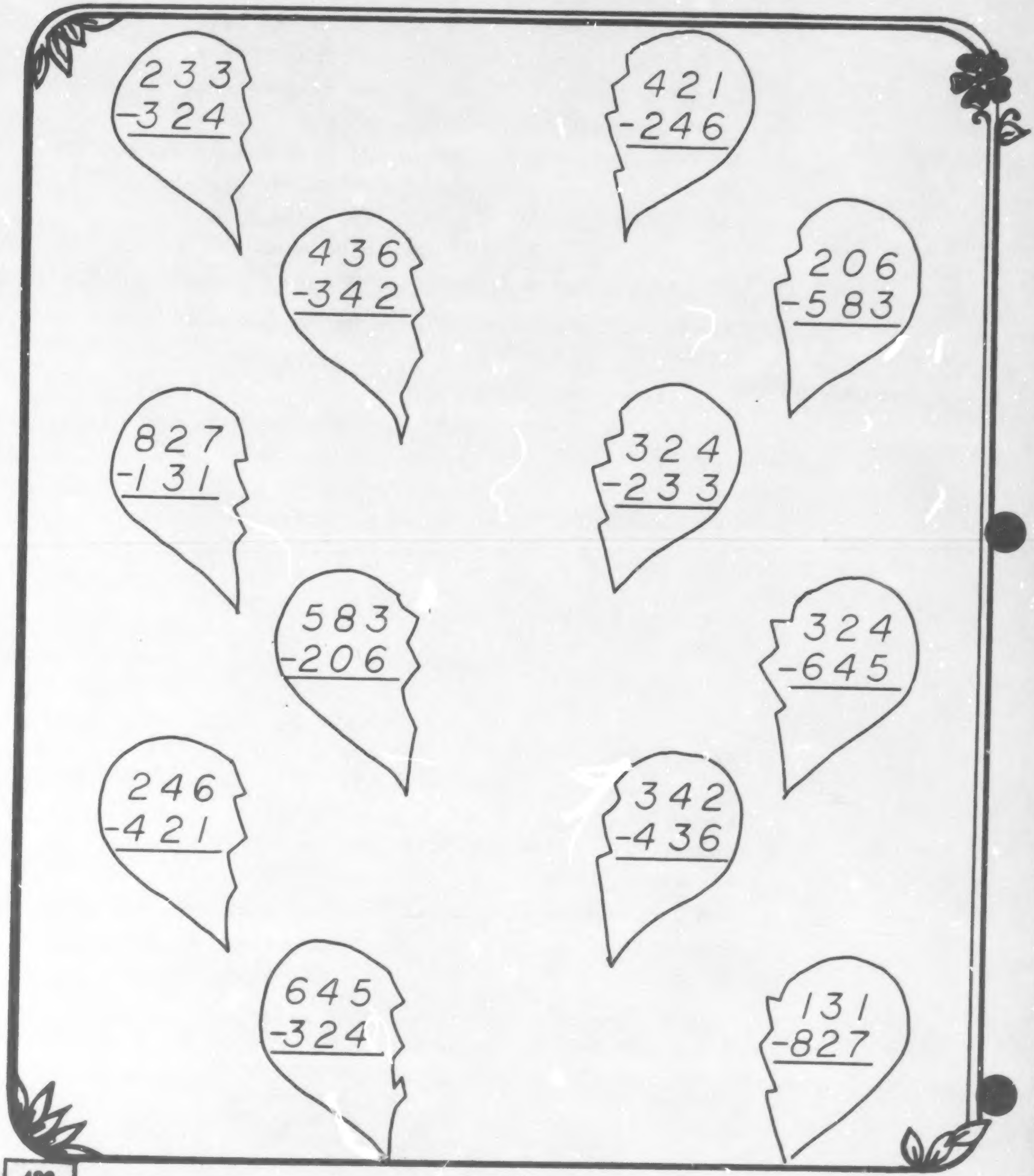
Join the yellow and red cubes and place parentheses around the first two addends, e.g., (200 + 400) + 300. Say, "Why did we join the yellow and red cubes?" (The parentheses tell us to add the yellow and red cubes first.) Separate the cubes. Rewrite the sentence as 200 + (400 + 300). Join the red and green cubes and repeat the procedure to demonstrate that the red and green cubes are added first.

Repeat this activity using other arrangements.

P.O. 2.02.07.01

NAME: ______________________________ CLASS: __________ DATE: ________

Find the sums. Mend the broken hearts by connecting the halves that have the same sums. What do you notice about the examples?



233
-324

421
-246

436
-342

206
-583

827
-131

324
-233

583
-206

324
-645

246
-421

342
-436

645
-324

131
-827

P.O. 2.02.07.02

NAME: ______________________ CLASS: __________ DATE: __________

Follow the directions as given below in Part A and Part B.

A. Complete the number table by filling in the missing sums.

+	1	2	3	4	5	6	7	8	9	10
1	2	3		5	6			9	10	
2		4	5	6		8	9		11	
3	4	5			8	9		11		13
4	5		7	8	9		11		13	14
5			8		10		12		14	
6		8	9	10		12		14		16
7				11	12	13	14		16	17
8	9	10			13		15	16		
9	10	11	12	13		15		17	18	19
10	11		13		15	16	17		19	20

B. Find the sums of the following pairs of numbers. Outline the diagonal formed using the color given.

2 + 3 = $\boxed{5}$ 3 + 2 = $\boxed{5}$ (red)

8 + 7 = ☐ 7 + 8 = ☐ (yellow)

4 + 3 = ☐ 3 + 4 = ☐ (blue)

1 + 2 = ☐ 2 + 1 = ☐ (brown)

5 + 6 = ☐ 6 + 5 = ☐ (green)

10 + 9 = ☐ 9 + 10 = ☐ (orange)

7 + 6 = ☐ 6 + 7 = ☐ (black)

P.O. 2.02.07.03

NAME: ____________________ CLASS: __________ DATE: ________

Maria did not complete her homework. Help her by filling in the missing numbers. Use the associative property of multiplication.

P.S. 105X Maria Montez

Class 2-313 January 30, 1984

Math Homework

$$400 + (\square + 6) = (400 - 30) - \square$$

$$(\square - 40) - 2 = 300 - (\square - 2)$$

$$800 - (20 - \square) = (800 - \square) - 7$$

$$(600 - 40) - 5 = \square - (40 - \square)$$

$$400 - (20 - \square) = (400 - \square) - 1$$

$$(100 - \square) - \square = 100 - (30 - 1)$$

$$\square - (20 - 1) = (400 - \square) - 1$$

$$(500 - \square) - 3 = \square - (80 - 3)$$

2.03.04 PROPERTIES OF SUBTRACTION

(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.03.04.01B recognize that the commutative property does not apply to subtraction;
e.g.,

10 + 2 = 2 + 10 yes
10 - 2 = 2 - 10 no

2.03.04.02B use a table to discover the inverse relationship between addition and subtraction.
e.g.,

+	1	2	3
1	2	3	4
2	3	4	5
3	4	5	6
4	5	6	7
5	6	7	8

2 + 1 = 3
3 - 1 = 2

VOCABULARY

TERMS

commutative property
addends
sum
difference

GETTING STARTED

Prepare a set of cards for the game "I am."
e.g.,

Numeral Side of Cards	Back of Cards
7	4 + 5
3	6 + 4
5	6 + 2
6	5 + 1
8	5 + 2
10	2 + 1
9	2 + 3

Distribute the cards to several students. Ask one student to start by reading the numeral side of the card and then the back of the card, e.g., "I am 7. Who has 4 + 5?" The student with the numeral 9 card says, "I am 9. Who has 2 + 3?" The next student says, "I am 5. Who has 6 + 2?" Repeat this procedure until everyone has at least one turn.

Prepare 0 through 9 numeral cards. Say, "When it is your turn, select two cards. Make up a subtraction fact using these cards, e.g., If you pick a 6 and a 9 you might make the number sentence 9 - 6 = 3." Write each subtraction fact and its answer on the chalkboard.

Continue this procedure until sufficient reinforcement is given.

2.03.04

2.03.04.01 **recognize that the commutative property does not apply to subtraction**

STRATEGY 1: Prepare and distribute interlocking cubes of two colors to each student. Display two sets of cubes (one set of four cubes and the other set of two cubes). Join the sets by interlocking the cubes. Say, "What number sentence describes the joining of these cubes?" Write 4 + 2 = 6 on the chalkboard. Disconnect the cubes and rejoin them by reversing the order. Write 2 + 4 = 6. Say, "The commutative property of addition states that the order of the addends does not change the sum."

Say, "Hold seven cubes of one color. Take away three cubes. How many are left? What number sentence describes what was done? (7 - 3 = 4) Now try to take seven away from three. You can't; therefore, we see that subtraction is not commutative."

Repeat this procedure using other subtraction facts.

STRATEGY 2: Prepare and display two pieces of different color construction paper which have been taped together. Place four paper clips on one side and five paper clips on the other side of the paper. Say, "How many paper clips are on each side of the paper?" Write 4 + 5 = 9 on the chalkboard. Reverse the order of the papers and say, "What number sentence describes the paper clips now?" Write 5 + 4 = 9. Say, "If we change the order of the numbers in addition, the sum of the numbers remains the same."

Write the following examples on the chalkboard. e.g.,

4 + 5 = 9
5 + 4 = 9

STRATEGY 2: cont'd

Say, "What would happen if we tried this with subtraction?" Ask the students to complete the examples 6 - 3 = ☐ and 3 - 6 = ☐. After they discover that they cannot take away six from three, say, "Subtraction does not follow the commutative property. If we change the order, we will not get the same answer."

Repeat this procedure with other subtraction examples.

2.03.04.02 **use a table to discover the inverse relationship between addition and subtraction**

STRATEGY 1:

Prepare and tape an addition table to the chalkboard.

e.g.,

+	0	1	2	3	4	5
0	0	1	2	3	4	5
1	1	2	3	4	5	6
2	2	3	4	5	6	7
3	3	4	5	6	7	8
4	4	5	6	7	8	9
5	5	6	7	8	9	10

Write 3 + 2 = ☐ on the chalkboard. Demonstrate how the table is used to solve this example.

Say, "We can also use this table to find the difference in a subtraction example." Write 5 - 3 = ☐ on the chalkboard. Say, "Find 5 in the table. Look for two addends that meet to make 5." (The 3 and 2, 5 and 0 and 4 and 1.) Connect the 3 and the 2. Write 3 + 2 = 5 under 5 - 3 = 2. Say, "What do you notice about these number sentences? Addition and subtraction are opposite operations."

STRATEGY 1: cont'd

Repeat this procedure using other number sentences, e.g., 2 + 3 = 5 and 5 - 2 = 3.

STRATEGY 2:

Prepare and distribute an addition table and interlocking cubes to each student. Say, "Take four cubes and three cubes and put them together. Who can write a number sentence to show this on the chalkboard? (4 + 3 = 7) Look at your addition chart. Find the sum of 4 + 3 by placing one finger on the 4 on the left side of the table and another finger on the 3 on the top row of numbers. Move your fingers across and down until your fingers meet." When you reach the sum of the numbers (7), say, "What happens when we go backwards? Let's start at 7 and move straight up to the top row. What is the number? (4) Let's subtract 4 from 7. If we move across from the 7 we get to 3. We can see that subtraction is the opposite or the inverse of addition."

Repeat this procedure using other examples.

P.O. 2.03.04.01

NAME: ____________________ CLASS: ________ DATE: ________

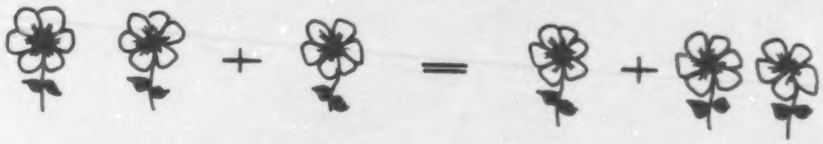
Is the sentence true?
Answer yes or no for each question.

$4+1=1+4$ ☐

$6+2=2+6$ ☐

$4-1=1-4$ ☐

$5-3=3-5$ ☐



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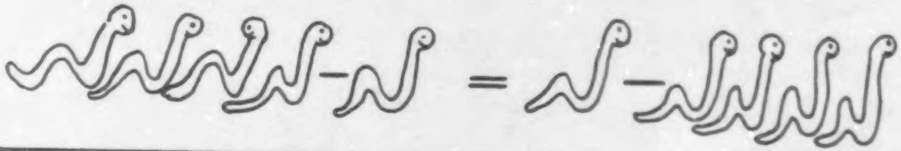

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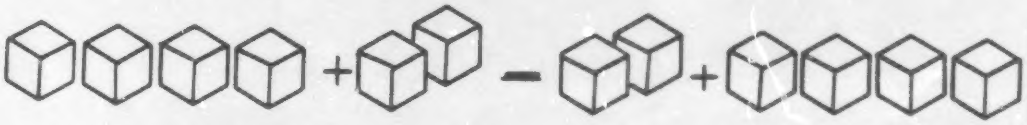


☐

P.O. 2.03.04.02

NAME: ______________________________ **CLASS:** __________ **DATE:** ________

Use the table to find the opposite of the number sentence. Write an opposite number sentence below the original sentence.

+	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10	11
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	18

① 3 + 4 = 7
7 − 4 = 3

② 9 − 3 − 6
____

③ 13 − 7 = 6
____

④ 8 + 4 = 12
____

⑤ 12 − 7 = 5
____

⑥ 7 + 9 = 16
____

⑦ 14 − 9 − 5
____

⑧ 7 + 8 = 15
____

⑨ 9 − 5 = 4
____

⑩ 5 + 6 = 11
____

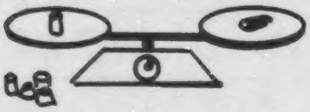
2.10.11 WEIGHT - GRAM AND KILOGRAM

(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

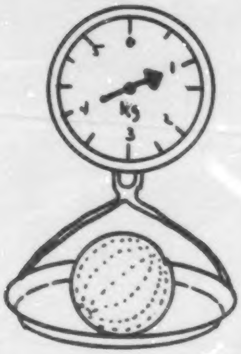
2.10.11.01A identify kilograms and grams as metric units of weight;
e.g.,



The paper clip weighs about _____ gram(s).

*2.10.11.02A estimate and weigh familar objects using appropriate metric units.
e.g.,

A kilogram is a metric unit of weight.



A cantaloupe weighs about 1 kilogram.

273

2.10.11

VOCABULARY

TERMS	SYMBOLS
gram	g
kilogram	kg
metric	

GETTING STARTED

Prepare and display several familiar classroom objects, e.g., chalk, crayons, eraser, textbook, chair, jar of paste, and a chart labeled HEAVY - LIGHT. Ask several students to decide whether an item is heavy or light without touching the item. Ask them what factors helped them to decide. Write the name of each item under the appropriate column marked heavy or light. Say, "Is there a better way to decide which of these items are heavy or light?" (A scale could be used to measure the exact weight of each item.)

Prepare and display a clock, thermometer, centimeter ruler, meter stick and scale. Prepare at least 10 cards with measurement statements, e.g., It is very hot today. Ask a student to select a card and say, "What can we use to measure how hot it is today?" Point to each item displayed and say, "Find the picture of the thermometer." Place the statement cards on the chalkboard ledge next to the picture of the appropriate scale. Repeat this procedure with the other cards.

2.10.11

2.10.11.01 **identify kilograms and grams as metric units of weight**

STRATEGY 1: Prepare and display several objects that can be measured in grams or kilograms (paper clip, pencil, book, rock). Hold up two objects (a paper clip and a textbook) and say, "Which object is heavier?" Introduce the gram as a very small measure of metric weight. Hold up the paper clip and say, "This paper clip weighs about 1 gram." Introduce the kilogram as a larger measure of metric weight. Hold up the textbook and say, "This book weighs about 2 kilograms." Display the other objects and decide whether each object is measured in grams or kilograms. Write gram - g and kilogram - kg on the chalkboard. Say, "g and kg are abbreviations for gram and kilogram." Ask the students to find or say the names of objects that can be measured in grams or kilograms.

STRATEGY 2: Prepare a balance scale, gram and kilogram weights and objects of different weights (a paper clip, nickel, dollar bill, can of fruit, textbook and a brick). Prepare a game board by alternately writing a g or kg in each square. Prepare fifteen picture cards of objects that can be measured in grams or kilograms.

e.g.,

g	g	kg
g	kg	g
g	kg	kg

Hold up the gram weight and say, "This is a metric unit of weight called a gram. (Place the weight in one pan of the balance scale and the dollar bill in the other pan.) Is the scale balanced? How much does this dollar bill weigh?" (About 1 gram.)

STRATEGY 2: cont'd

Repeat this procedure using the brick to balance the kilogram weight. Place each of the remaining objects on the balance scale and decide whether the gram or kilogram weight will balance the scale.

Display the game board and place the picture cards on the chalkboard ledge. Say, "We are going to play a game. Each square on your game board is labeled g from gram or kg for kilogram. We will select picture cards and decide whether the object shown is measured in grams or kilograms, e.g., a picture of the pencil would be taped over a square marked g for grams."

2.10.11.02 **estimate the weight of an object in grams or kilograms**

STRATEGY 1: Prepare a balance scale, several gram and kilogram weights and objects of different weights. Ask a student to hold an object, estimate the weight in grams or kilograms, record the estimate and then check the estimates by using the balance scale and metric weights to find the actual weights. Compare the estimates to the actual weight of each object.

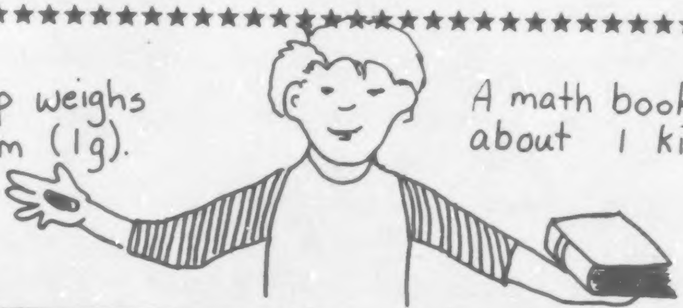
P.O. 2.10.11.01

NAME: ______________________________ CLASS: __________ DATE: ________

A. Decide whether the following objects are measured in grams or kilograms.

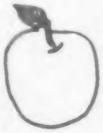
B. Complete each sentence with grams or kilograms.

A paper clip weighs about 1 gram (1g).

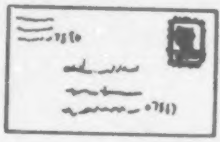


A math book weighs about 1 kilogram (1kg).

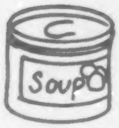
A.



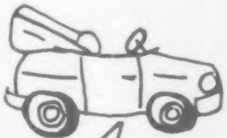
1. ______



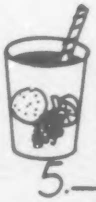
2. ______



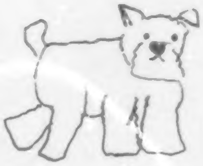
3. ______



4. ______



5. ______



6. ______

B.

1. A nickel weighs about 5 __________.

2. My brother weighs 60 __________.

3. Our car weighs about 2000 __________.

4. A spoon can hold 10 _____ of sugar.

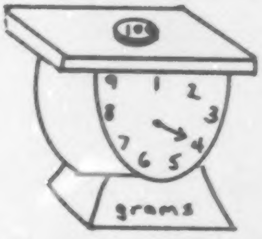
5. That hamburger weighs 100 __________.

6. Four apples weigh about 1 __________.

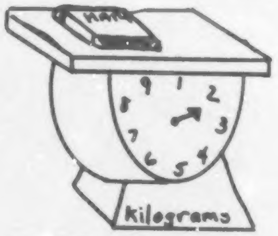
P.O. 2.10.11.02

NAME: ________________________________ CLASS: __________ DATE: __________

A. Weigh each object to the nearest gram of kilogram.
B. How would you measure each object's weight-in grams or kilograms?

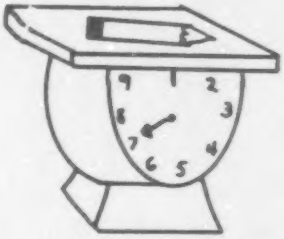


about 4 grams



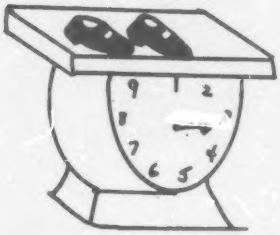
about 2 kilograms

1.



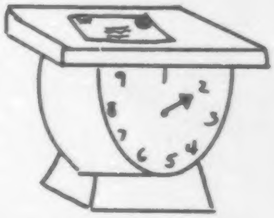
____ grams

2.



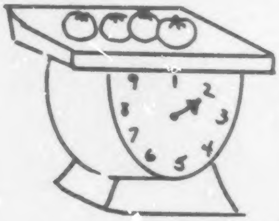
____ kilograms

3.



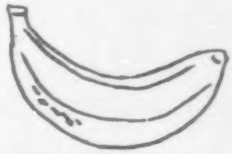
____ grams

4.

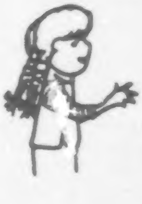


____ kilograms

B.

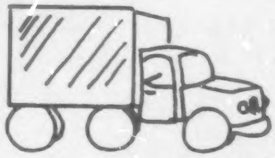


1. __________

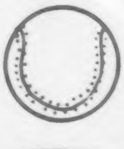


2. __________

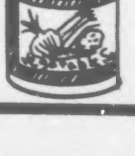
3. __________



4. __________



5. __________



6. __________

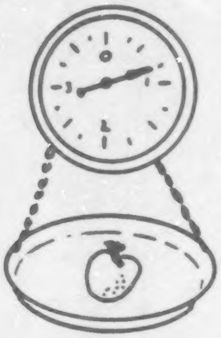
2.10.12 WEIGHT - OUNCE, POUND

(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.10.12.01B identify pounds and ounces as standard units of weight;
e.g.,



How many ounces does a piece of fruit weigh?

2.10.12.02B estimate and weigh familar objects using appropriate customary units.
e.g.,

Object	Estimate	Actual
book	1 lb.	2 lbs.

279

2.10.12

VOCABULARY

TERMS	SYMBOLS
ounce	oz.
pound	lb.
weight	

GETTING STARTED

Prepare and display a thermometer, a measuring cup and spoons. Say, "When we want to find out how hot or cold it is, what do we use?" (A thermometer is used to measure the temperature.) Ask a student to read the temperature inside the classroom. You can also measure the temperature outside of the classroom. Say, "Let's make believe that we are going to bake a cake. What do we need? (milk, eggs...) Before we put all of these things together what do we have to do?" (Measure everything.) It may be helpful to show the students a cake mix box. Hold up the measuring cup and spoons and say, "We will use the measuring cup to measure a cup of milk, the measuring spoons to measure a teaspoon of sugar. The thermometer, cup and spoons are measurement tools."

Prepare six brown bags with the following objects in each: cotton, a sponge, tissues, rocks, crayons and beans. Mark the bags containing the cotton, sponge and tissues as A. Mark the bags containing the rocks, crayons and beans as B. Pair off the bags, e.g., AB AB AB. Say, "We are going to perform an experiment. I have six brown bags. The bags all look exactly the same. You are to guess which is the heavier bag in each group. You can feel the bags but you cannot lift them." Chart the results of their guesses. Then ask several students to lift each bag to determine which bag is actually heavier in each group. Compare the visual to the tactile estimates.

2.10.12

2.10.12.01 **identify pounds and ounces as standard units of weight**

STRATEGY 1: Prepare and display a scale that measures weight in pounds and ounces, objects weighing at least one pound, objects weighing less than a pound, and several empty food containers marked in pounds or ounces. Say, "How many students have gone food shopping? What are some things that you bought in the supermarket or grocery store? When you bought apples how many did you buy? What did the grocery person do with the apples? (Weighed them by the pound.) We measure how much something weighs in pounds. We use a scale to find the number of pounds. Who can name some things that we measure in pounds?" (meat, cheese, fruits, vegetables, people)

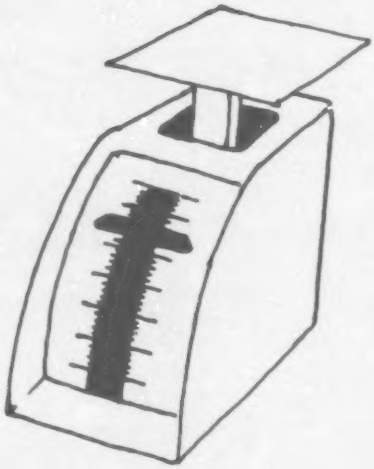
Place each of the displayed objects, one at a time, on the scale. Ask a student to identify the weight to the nearest pound. Say, "Sometimes I want to buy 1 apple. I know it weighs less than a pound. I can weigh this apple in ounces. An ounce is a part of a pound. There are 16 ounces in one pound." Ask the students to weigh various objects and record the weight of the object in ounces or pounds.

STRATEGY 2: Adapt Strategy 1 of P.O. 2.10.11.01 for identifying pounds and ounces.

2.10.12

2.10.12.02 **estimate and weigh familiar objects using appropriate standard units**

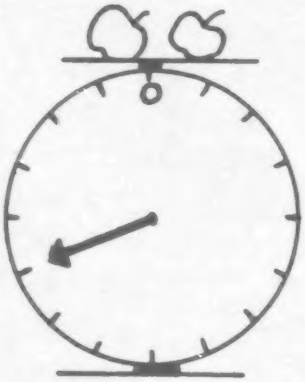
STRATEGY 1: Prepare and display a scale that measures weight in pounds and ounces and the following pairs of objects to be weighed: a book, box of chalk, 2 shoes, a rubber ball, a can of sand, 3 pencils, a dictionary, 2 erasers, 3 notebooks and a box of straws. Hold up the book and say, "Estimate the weight of this object. (Record the estimate.) Let's weigh the object on the scale." Repeat this activity for all of the objects. Compare the estimates with the actual weights.



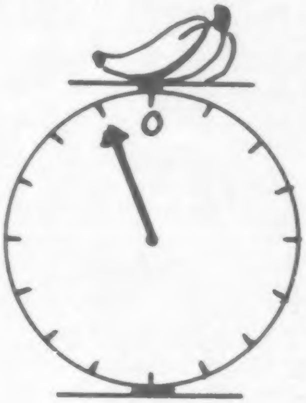
P.O. 2.10.12.01

NAME: ______________________ CLASS: ________ DATE: ________

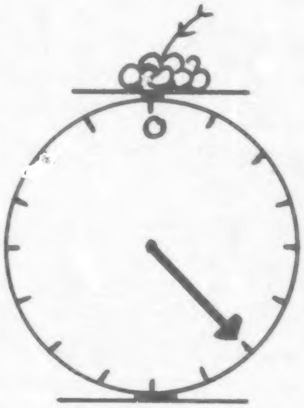
Write the weight of each fruit in ounces.



11 ounces



____



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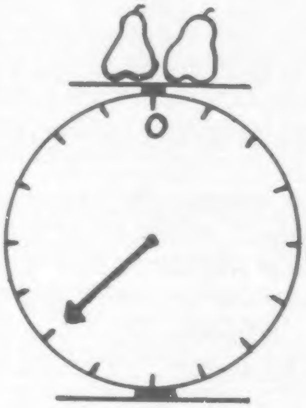

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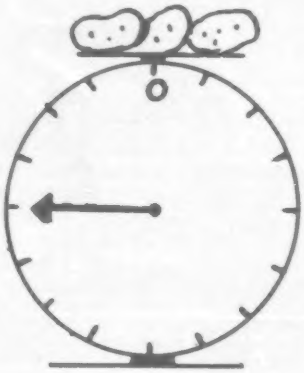
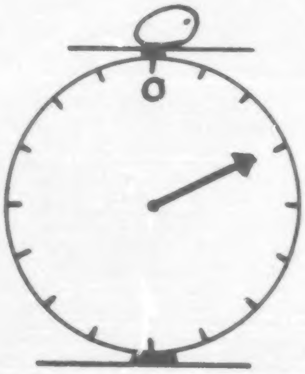


____

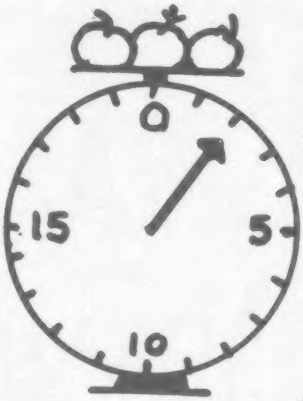


____

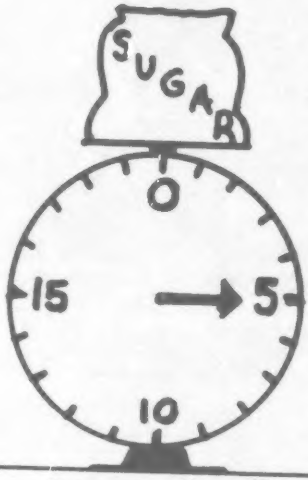
P.O. 2.10.12.01

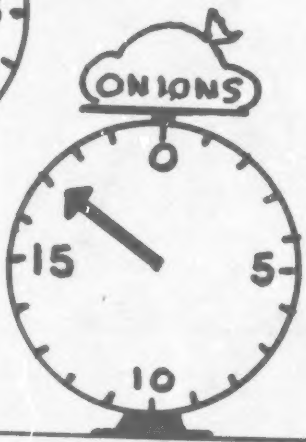
NAME: ____________________ CLASS: __________ DATE: ________

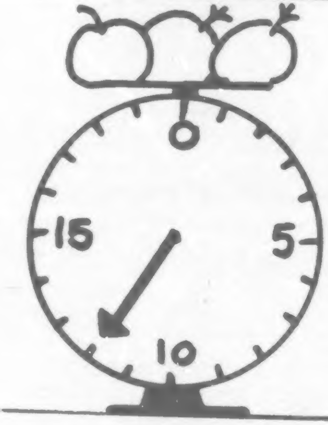
Give the weight of each food in pounds.

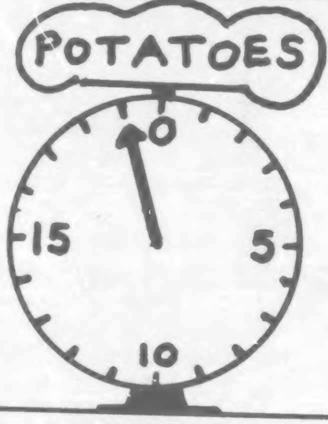


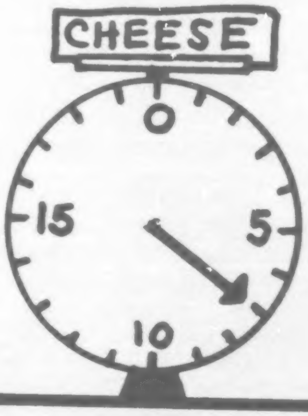
2 pounds

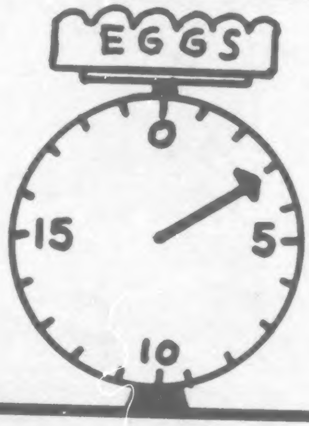

SUGAR
0
5
10
15


ONIONS
0
5
10
15




POTATOES
0
5
10
15

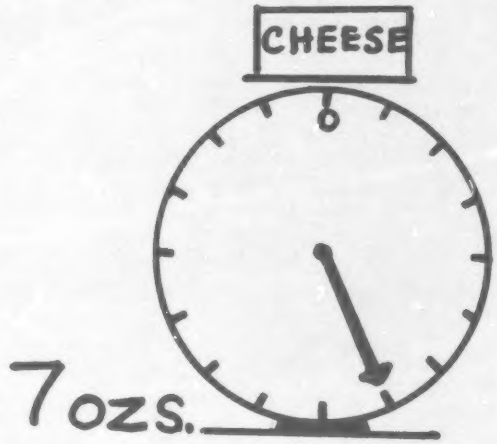

CHEESE
0
5
10
15

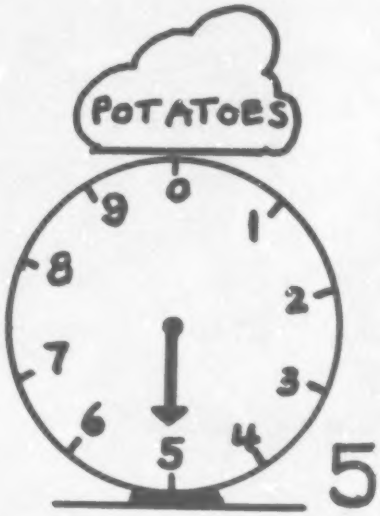

EGGS
0
5
10
15

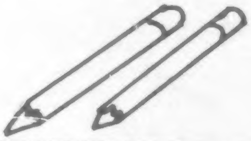
P.O. 2.10.12.02

NAME: ____________________ CLASS: __________ DATE: ________

Mark the box (✓) which shows the weight we would use to measure each object.


CHEESE
0
7ozs.


POTATOES
0
1
2
3
4
5
6
7
8
9
5 lbs.

	ozs.	lbs.
basketball		
bananas		
baby		
 pencils		
feathers		

2.13.05 MISSING INFORMATION

(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.13.05.01A determine whether sufficient information exists to solve a problem;

e.g.,

> Jovita gave 3 apples to each friend. How many apples did she give away?

2.13.05.02.A supply missing information to solve a problem.

e.g.,

> Marvin bought 2 boxes of pencils. How many pencils did he buy in all?
>
> What information is missing?

2.13.05

VOCABULARY

TERMS

information

GETTING STARTED

Prepare and distribute envelopes containing ten counting chips to each student. Say, "Ann bought an ice cream cone with 2 scoops of ice cream. Her brother bought a cone with 3 scoops of ice cream. How many scoops did they both buy? Take out enough chips to show what Ann bought. Take out enough chips to show what her brother bought. Who can tell us the number sentence for this story?" Write 2 + 3 = 5 on the chalkboard. Repeat this procedure with other stories for the students to dramatize with their chips.

Write several number sentences on the chalkboard in both horizontal and vertical formats.

e.g., $\begin{array}{r}7\\ +3\\ \hline\end{array}$ $\begin{array}{r}0\\ +4\\ \hline\end{array}$ $7 + 3 = \square$ $\begin{array}{r}4\\ +2\\ \hline\end{array}$ $0 + 4 = \square$ $4 + 2 = \square$

Say, "I will tell you a story. See if you can find the number sentences that represent the story. Seven boys were playing ball. Three boys joined them. How many boys are there in all? Which number sentences tell you about the story? Who would like to draw a ring around them?"

Repeat this procedure with other story problems.

e.g.,

a) A car has 4 wheels. A bicycle has 2 wheels. How many wheels altogether?

b) Bob was walking down the street. His pockets were empty. Bob found 4 pennies and he put them in his pocket. How many pennies are in Bob's pocket now?

c) At the zoo I saw 5 lions and 4 tigers. How many animals did I see?

d) Carol had 2 pencils. Her mother gave her one more. How many pencils does Carol have in all?

2.13.05

2.13.05.01 **determine whether sufficient information exists to solve a problem**

STRATEGY 1: Prepare a flannel board and cutouts of girls and flowers. Leave the flannel board empty. Say, "Susan gave her friends 4 flowers each. How many flowers did she give away? What did Susan give away? (flowers) How many flowers did she give to each friend? (4 to each friend) How many friends got flowers?" (Don't know)

Show flowers in groups of 4 on the flannel board and say, "Can we match the girls with the flowers? Why not? (No, because we do not have enough information.) What do we need to know to solve this problem?" (How many friends she gave flowers.)

STRATEGY 2: Prepare and distribute blocks to each student. Say, "Tom had 20 blocks. He put them into rows. How many blocks were in each row? Use your blocks to show this problem. Can you find the answer? Why not? (You need to know how many blocks he put in each row.) There is not enough information to give a correct answer."

Repeat this procedure with other problems that have insufficient information.

2.13.05

2.13.05.02 **supply missing information to solve a problem**

STRATEGY 1: Say, "John bought 2 boxes of cards. How many cards did he buy in all? (Show two boxes.) We know that John bought 2 boxes of cards. What information is missing from this problem?" (How many cards were in each box.) Ask a student to retell the problem so that it can be solved. e.g., John bought 2 boxes of cards. Each box had 3 cards in it. How many cards did he buy in all?

Solve the problem to check that it has enough information.

Repeat this procedure with similiar problems.

STRATEGY 2: Say, "Tonya bought 6 bottles of soda. She gave the cashier $4.00. How much change did she receive?"

Ask one student to be the cashier and another to be Tonya and dramatize the problem. Say, "When Tonya gives the cashier $4.00, can he/she give her change? Why not? What information is missing?" (The price of the soda.)

Ask a student to reword the problem so that it can be answered.

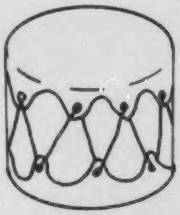
Repeat this procedure with similiar problems.

P.O. 2.13.05.01

NAME: ______________________ CLASS: ________ DATE: ________

Do you have enough information to solve the problem?
Circle Yes or No.

4 red drums.
6 blue drums.
How many drums
in all?



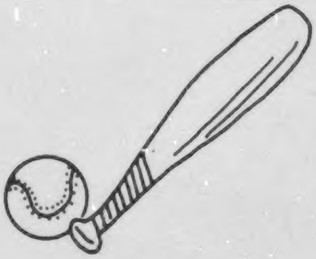
Yes No

Tom has 30 baseball
cards. He gave some
to Jim. How many does
he have left?

YANKEES
NY
METS
RED SOX

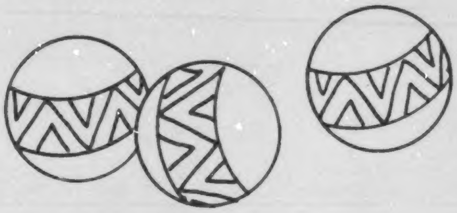
Yes No

Peter played ball with
his friends for 2 hours.
What time did he stop
playing?



Yes No

Joan wanted to give
3 balls away. She had
6. How many did she
have left?



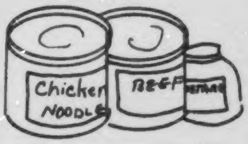
Yes No

P.O. 2.13.05.02

NAME:______________________ CLASS:________ DATE:________

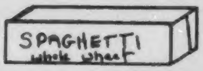
What information is missing?

1. Tania bought 2 cans of soup and 1 jar of mustard. What was the total cost?


Chicken NOODLE
BEEF

2. Robert eats lots of bananas. How many does he eat in 4 days?

3. John bought spaghetti. He gave the cashier \$2.00. How much change did he get?


SPAGHETTI
whole wheat

4. Bill walked to the playground. How many blocks did he walk?

5. Darlene dances everyday. How many hours does she dance in one week?

Unit 58

2.01.11 COUNT FORWARD AND BACKWARD BY PATTERNS OF FOUR

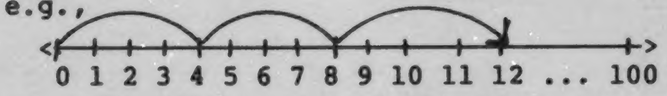
(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.01.11.01B identify the numbers from 0 through 100 by fours;

e.g.,



2.01.11.02B write the numbers in counting order from 0 through 100, counting by fours;

e.g.,

1, 4, 8, 12, 16, ...

2.01.11.03B order and write the numbers from 0 through 100, counting by fours;

e.g.,

8 1 4 20 16 12 ...

1 4 8 12 16 20 ...

2.01.11.04B count and write the numbers from 1 through 100 in backward order, counting by fours.

e.g.,

100, 96, 92, ...

2.01.11

VOCABULARY

TERMS

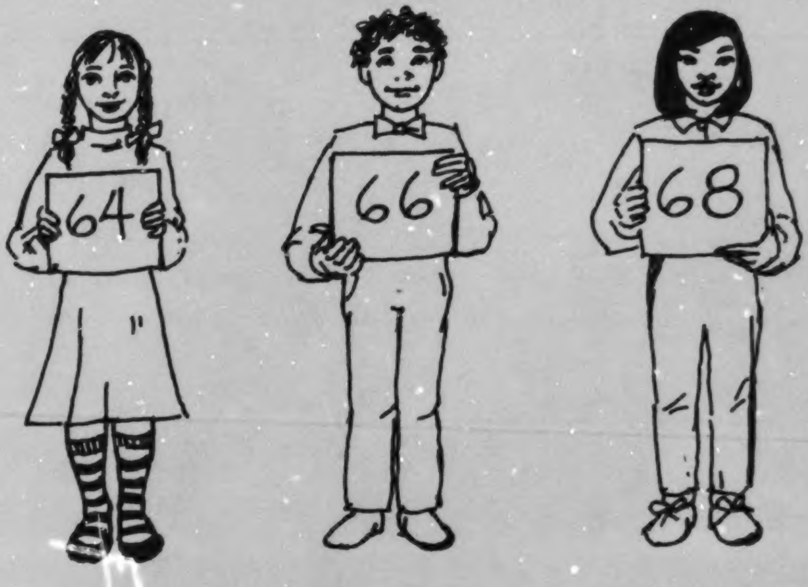
count
order
backward order

GETTING STARTED

Play "Buzz" with the students. Say that every time a multiple of two is reached, the student says "Buzz" instead of the number, e.g., 1, "Buzz", 3, "Buzz"...

Prepare and distribute a card having a multiple of two to each student. Say, "We are going to play 'Before and After'. I will ask a student to come to the front of the room and show his/her number. The students who have the cards which come before and after when counting by twos should come up and place themselves in the correct order. Another student will read the three numbers which are being displayed."

Play should continue until all students have had a turn.



516

2.01.11

2.01.11.01 **identify the numbers from 0 through 100 by fours**

STRATEGY 1: Prepare and distribute a set of cards numbered in multiples of four from 0 through 100 to each student. Display a pocket chart. Say, "Here is 0, who has 4?" The student with the 4 card stands and puts the card in the pocket chart. Say, "We have 4, who has 8,...?"

Repeat this procedure through 100. Show the pattern formed by the cards in the pocket chart.
e.g.,

0	4	8	12	16	20
	24	28	32	36	40
	44	48	52	56	60

STRATEGY 2: Arrange five unordered cards, which are multiples of four, in a pocket chart, e.g., 12, 10, 16, 4, 8. Say, "Who can arrange these cards in increasing order?" (4, 8, 10, 12, 16)

Repeat this procedure by placing five other cards underneath the first five cards.
e.g.,

4	8	10	12	16
24	28	32	36	40

Say, "Do you see a pattern starting? What digits are repeated? Do you see a pattern in the first column?" Point out that the digits 4, 8, 2, 6 and 0 are repeated.

2.01.11.02 **write the number in counting order from 0 through 100 by fours**

STRATEGY 1: Prepare a set of cards numbered in multiples of four from 0 through 100. Distribute the first ten

STRATEGY 1: cont'd

cards. Ask the students holding these cards to come to the front of the room and stand in counting order. Ask the seated students to write the numbers shown in their notebooks.

Repeat this procedure with the other cards and new participants.

STRATEGY 2:

Draw this chart on the chalkboard:

4, 8, 12, ____ ____
24, 28, ____ ____ ____
44, 48, ____ ____ ____
Continue through 100.

Ask students to take turns filling in the blanks. Say, "What number comes after 12?..." Fill in the numbers on the chart. When the class has finished filling in the chart, ask other students to count by fours from different starting points, e.g., 44, 48, 52, 56, 60...

2.01.11.03 order and write the numbers from 0 through 100, counting by fours

STRATEGY 1:

Prepare numeral cards 0 through 100 in multiples of four. Distribute the first three cards (unordered) to a student, e.g., 0 8 4 . Ask the student to write the numbers on his/her cards in the correct counting order. The student writes 0, 4, 8.

Repeat this procedure, using the other cards.

STRATEGY 2:

Prepare a number line on a sentence strip roll. Mark only the 0, 4, 8, and 100 on the number line. Ask the students to count by fours through 100. Say, "Who can find the spot for 16 on the number line? Who can come to the number line and mark 24?" Repeat this procedure until the number line is completed.

2.01.11.04 count and write the numbers from 0 through 100 in backward order, counting by four

STRATEGY 1: Prepare and display 25 transparent plastic cups with four blocks, chips, or pennies in each cup. Drop the contents from each cup into a large box or bowl. Say, "There are four pennies in the box." Write 4 on the chalkboard. Empty another cup. Say, "Now there are eight pennies in the box." Repeat this procedure until all of the cups are empty and there are 100 pennies in the box. Reverse the process. Say, "There are 100 pennies in the box. We will take out four pennies and fill one cup. How many pennies are in the box now?" Write the numbers on the chalkboard, e.g., 100, 96, 92... 0.

Continue this procedure until all of the cups are filled and the box is empty.

STRATEGY 2: Prepare and display a hundreds chart starting with 100 and ending at 0 and distribute a copy to each student. Ask students to call out each number counting backward by fours beginning with 100, 96, 92... Cover or erase each number as it is called. The students can place an X on their chart for each number called.

Reverse the process. This time, rewrite the numbers as the students call each number.

P.O. 2.01.11.01

NAME: ______________________ CLASS: ________ DATE: ________

This monster can only eat numerals that are named when s/he counts by 4. Feed the Number Monster by coloring the numerals s/he can eat. Hint: s/he wants 25 numerals.

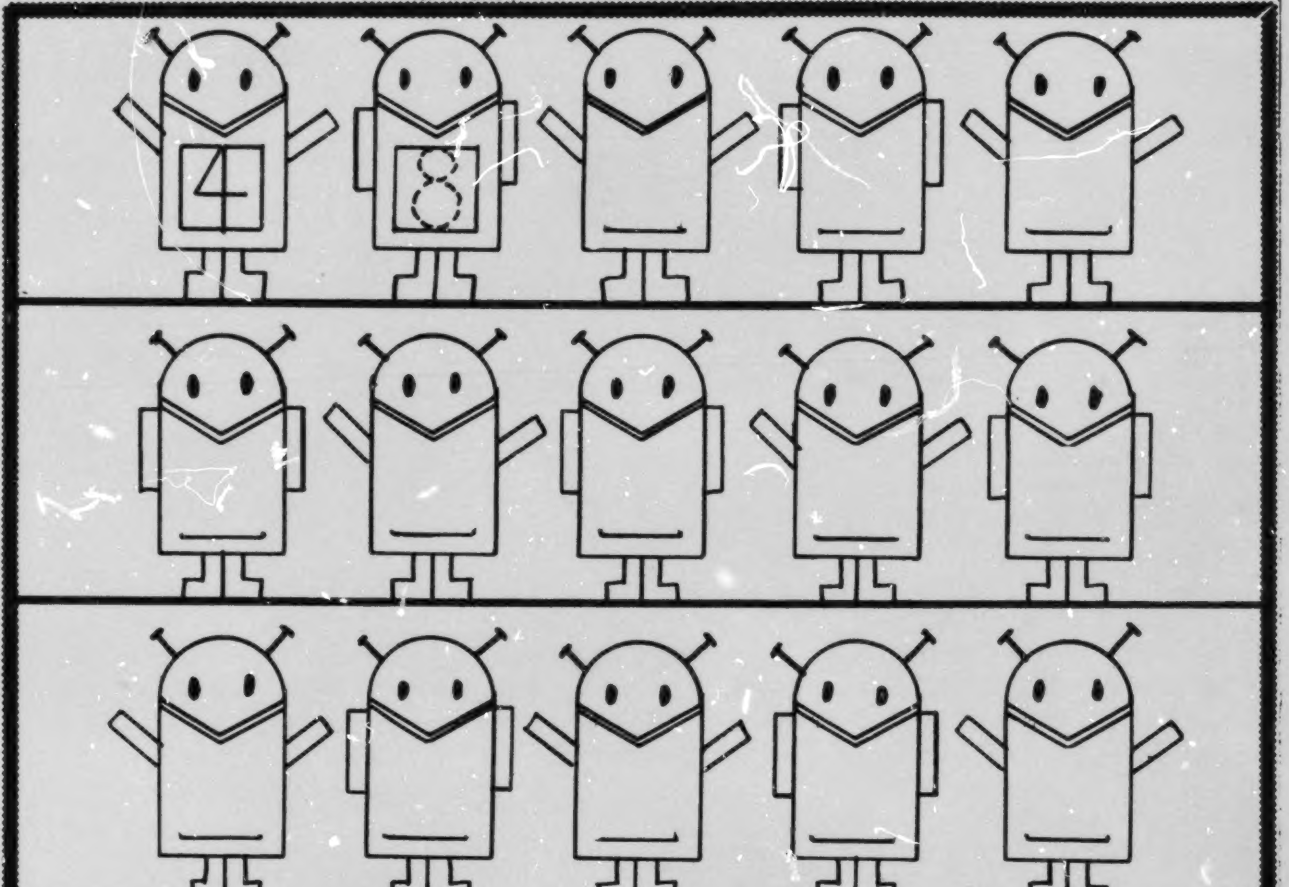
NUMBER
MONSTER

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

P.O. 2.01.11.02

NAME:____________________ CLASS:________ DATE:________

These robots work in an office building delivering mail. Every morning they leave their workroom in counting order of fours. Write the numbers on the robot's chests.



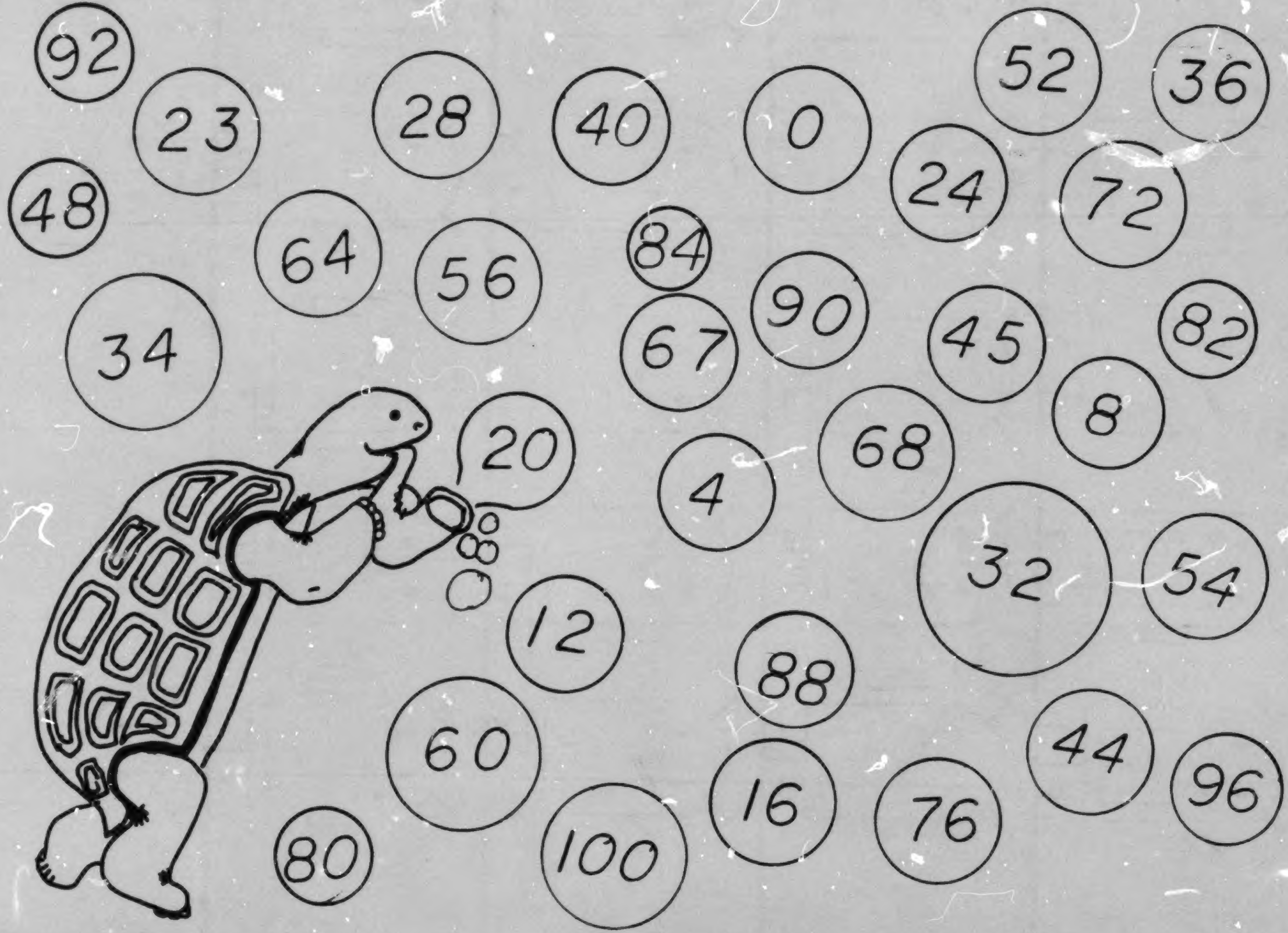
F.O. 2.01.11.03

NAME: ____________ CLASS: ____________ DATE: ____________

Count by fours. Color the balloons that match the numbers you see at the top of the page.

622

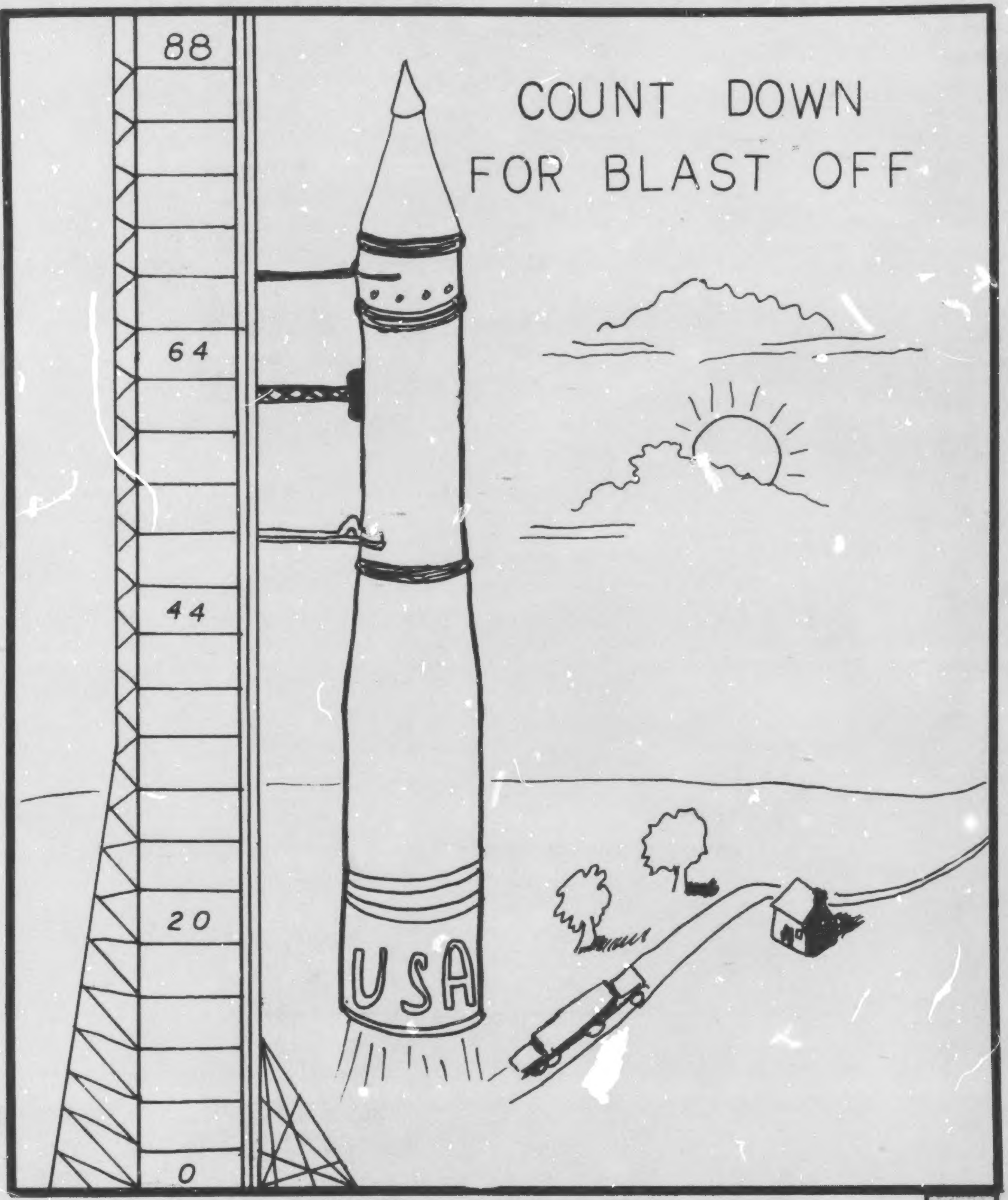
0, 4, 8, __, 16, __, __, 28, 32, __, __, 44, 48,
__, 56, __, __, 68, 72, __, 80, __, __, 92, __, __.


92
23
28
40
0
52
36
48
24
72
64
56
84
34
90
67
45
82
8
20
68
4
32
54
12
88
60
44
96
16
76
80
100

P.O. 2.01.11.04

NAME:____**CLASS:**__________**DATE:**_________

This rocket ship is about to blast off. The time is 88 seconds. Count the numbers backward from 88 to 0 by fours. Write them on the lines.


COUNT DOWN
FOR BLAST OFF
88
64
44
20
0
USA

2.04.04 MULTIPLICATION FACTS FOR FOURS THROUGH 20

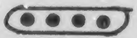
(1-2 lessons)

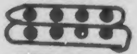
PERFORMANCE OBJECTIVES

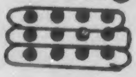
The student will be able to...

2.04.04.01A count by fours;

e.g.,

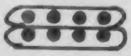
1 group of four = 4 

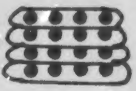
2 groups of four = 8 

3 groups of four = 12 

2.04.04.02B show groups of four;

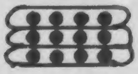
e.g.,

2 groups of four =  2 x 4

4 groups of four =  4 x 4

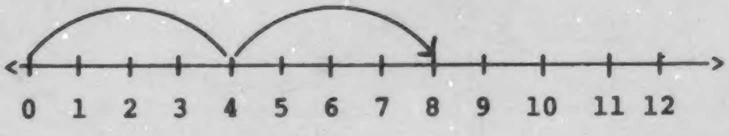
2.04.04.03A demonstrate that multiplication is the process of repeated addition of like addends;

e.g.,

4 + 4 + 4 =  3 x 4

2.04.04.04A use a number line to demonstrate counting by fours.

e.g.,



1 four = 4

2 fours = 8

VOCABULARY

TERMS	SYMBOLS
multiplication	x
array	

GETTING STARTED

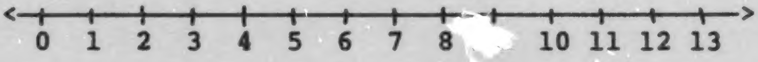
Play the game "Buzz". Place a hundreds chart in front of the classroom. Ask one student to start counting as you point to each number. Every time a student reaches a multiple of four, that student should say, "Buzz". A student says, "one", the next student says, "two", the third student says, "three", the fourth student says, "Buzz".

Ask two students to come to the front of the room. Write 2 on the chalkboard. Call up two more students and write 4. Continue calling two students at a time until you have five pairs of students and have written 2, 4, 6, 8, 10 on the chalkboard. Ask all the students to sit down. Ask two different students to hold hands. Say, "How many groups of two do you see?" (1 group of two.) Ask two more students to come to the front of the room and hold hands. Say, "How many groups of two do you see?" (2 groups of two.) Repeat this procedure with additional pairs of students. Record this activity on the chalkboard as follows: 2 + 2 + 2 + 2 = 8.

2.04.04

2.04.04.01 count by fours

STRATEGY 1: Draw a number line on the chalkboard as follows.
e.g.,



Say, "Mr. Bumble Bee starts his hunt for honey at zero (0). All of the sweet flowers are hiding in the weeds. In order to find them, Mr. Bee has to buzz 4 spaces each time. Where will he land after one flight of four? Where will he land after two flights of four?"

Repeat this procedure through five flights of four. Circle each multiple of four when Mr. Bee lands.

STRATEGY 2: Prepare pictures of five roller skates. Say, "Tommy works at the New Roller Derby. Every night Tommy collects a large bag of old roller skates. Tommy has to count the skates and bring them to the manager. One night the manager asked Tommy how many wheels he had in his bag. Tommy looked very puzzled. He counted the skates. There were five skates, but he wasn't sure how many wheels there were. Can anyone help him?"

Display a picture of a roller skate. Say, "One skate has how many wheels?" (4) Place a second picture of a skate next to the first picture. Say, "Two skates have how many wheels?" (8) Repeat this procedure for all five roller skate pictures. Record your findings on the chalkboard: 1 skate = 4 wheels, 2 skates = 8 wheels...

Ask students to count by fours using desk legs, desk chairs, and/or corners of the desks.

2.04.04

2.04.04.02 **show groups of four**

STRATEGY 1: Prepare and display a picture of a chick or a toy chick. Distribute an egg carton and beans to each student. Say, "Charlie the chick is the oldest chick in his family. His job is to make sure all of his brothers and sisters get their dinner. He has to give each chick four beans. Charlie has two brothers and three sisters. Use your egg carton to show what Charlie must get ready for dinner. Place four beans in five sections of your egg carton. How many groups of four does Charlie have? (5) How many beans did Charlie give out? (20) Charlie had five groups of four or 5 x 4."

STRATEGY 2: Prepare five bags with four buttons in each bag. Each student will need 1" graph paper. Distribute the five bags to five students. Say, "Look inside your bag. How many buttons do you have? (4) We are going to find out how many buttons we have altogether. How many buttons does each bag contain? (4) How many buttons in 2 bags? 2 x 4 = 8." Repeat this procedure through 5 bags of buttons.

2.04.04.03 **demonstrate that multiplication is the process of repeated addition of like addends**

STRATEGY 1: Prepare and distribute graph paper to each student. Tape 1" graph paper to the chalkboard. Say, "We are going to draw some patterns." Draw one dot in each of four squares on the graph paper and ask the students to do the same. Draw two more rows of four dots and ask the students to do the same. Say, "How many rows of dots did we draw? (3) How

STRATEGY 1: cont'd

many dots are in each row? (4) We can add the number of dots in each row to find how many dots in all." Write the addition sentence 4 + 4 + 4 = 12 and the multiplication sentence 3 x 4 = 12 on the chalkboard. Note that the 3 must be first because there are 3 groups of 4. Say, "This picture of dots is called an array."

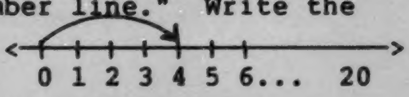
Repeat this procedure with arrays for 2 x 4, 4 x 4 and 5 x 4.

STRATEGY 2: Prepare and display a flannel board, 20 felt apple and five basket outline cutouts. Place one basket with four apples on the flannel board. Say, "One basket has 4 apples." Place another basket with 4 apples next to it. Say, "Two baskets of four apples, or 4 + 4, are eight apples. Place a third basket with four apples in it. Say, "Three baskets of four apples, or 4 + 4 + 4, are 12 apples." Repeat this procedure for the fourth and fifth baskets.

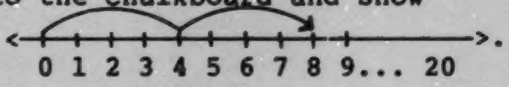
Say, "We can find out how many apples we have by adding or multiplying."

2.04.04.04 **use a number line to demonstrate counting by fours**

STRATEGY 1: Prepare and display a 0 through 20 number line. Say, "Count the numbers on the number line." Write the following on the number line



and say, "How many numbers are grouped together? (4) How many groups are there? One group of four equals 4." Write 1 four = 4 on the chalkboard. Ask a student to come to the chalkboard and show another group of four,



Say, "How many numbers are grouped? (8) How many

STRATEGY 1: cont'd

groups are there? (2) What does our number line show?" (2 groups of four = 8.) Write 2 fours = 8 on the chalkboard. Repeat this procedure through 5 fours equals 20. When the groupings have been completed, point to the groupings on the number line and ask the students to tell you what each grouping means, e.g., 1 four = 4, 2 fours = 8... 5 fours = 20.

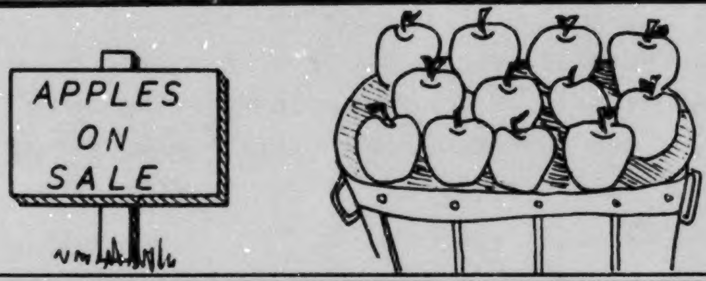
STRATEGY 2:

Prepare and display a 0 through 20 number line. Tape a picture of a rabbit to the number line. Say, "Our friend Mr. Jumper is very hungry. He would like to eat some carrots. Let's help Mr. Jumper find some carrots. Each time the rabbit makes a jump, he will get four carrots. (Demonstrate.) Mr. Jumper jumped once and found four carrots." Write 1 four = 4 on the chalkboard. Draw another jump on the number line and say, "How many jumps did Mr. Jumper make? (2) How many carrots did he find?" (8) Write 2 fours = 8 on the chalkboard. Ask various students to come up to the number line and demonstrate 3, 4 and 5 jumps. For each jump say, "How many jumps did Mr. Jumper make? How many carrots did he find?" Write each grouping on the chalkboard. For further reinforcement say, "If Mr. Jumper made 3 jumps how many carrots would he find? How many jumps did Mr. Jumper make if he found 8 carrots?"

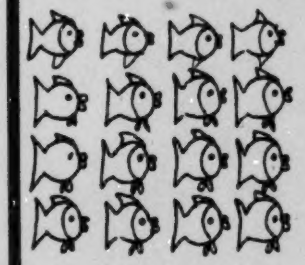
P.O. 2.04.04.01

NAME: ______________________ CLASS: ________ DATE: ________

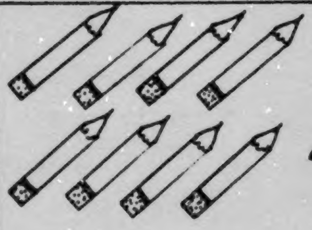
Follow the directions.


APPLES
ON
SALE

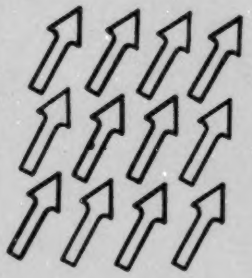
3 fours = 12



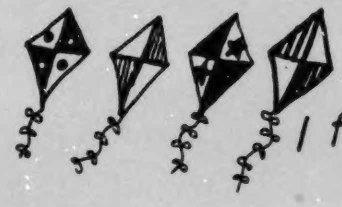
4 fours = ☐



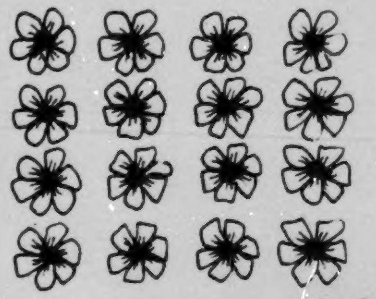
2 fours = ☐



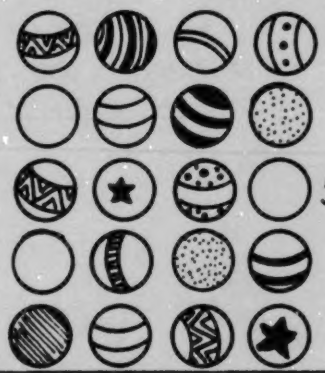
3 fours = ☐



1 four = ☐

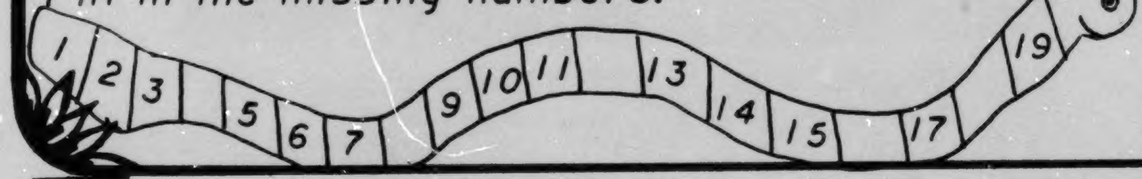


4 fours = ☐



5 fours = ☐

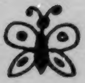
Fill in the missing numbers.


1
2
3
5
6
7
9
10
11
13
14
15
17
19

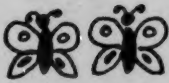
P.O. 2.04.04.02

NAME: ______________________ CLASS: ________ DATE: ________

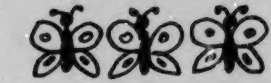
Fill in the blanks.



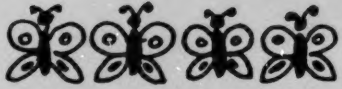
1 butterfly, 4 wings, 1 x 4 = 4



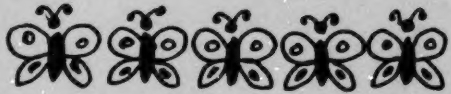
2 butterflies, ___ wings, 2 x 4 = 8



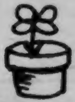
3 butterflies, ___ wings, ___ x ___ =



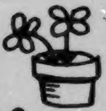
4 butterflies, ___ wings, ___ x ___ =



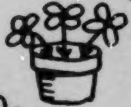
5 butterflies, ___ wings, ___ x ___ =



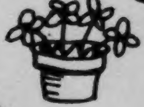
1 flower, 4 petals, ___ x ___ =



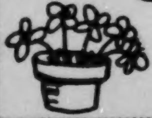
2 flowers, ___ petals, ___ x ___ =



3 flowers, ___ petals, ___ x ___ =



4 flowers, ___ petals, ___ x ___ =

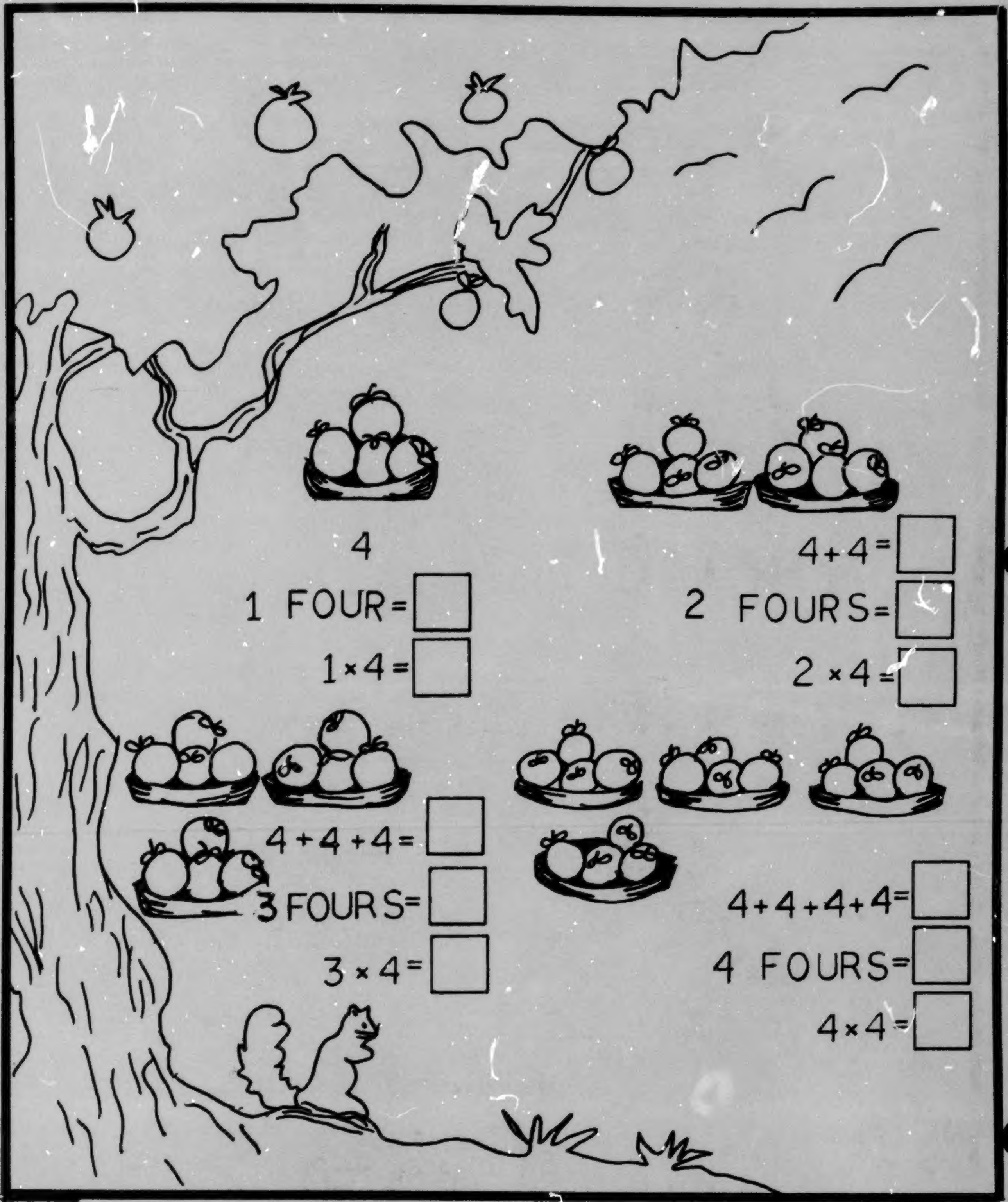


5 flowers, ___ petals, ___ x ___ =

P.O. 2.04.04.03

NAME: ____________________ CLASS: __________ DATE: __________

Fill in the blanks.



4

1 FOUR = ☐

1 × 4 = ☐

4 + 4 = ☐

2 FOURS = ☐

2 × 4 = ☐

4 + 4 + 4 = ☐

3 FOURS = ☐

3 × 4 = ☐

4 + 4 + 4 + 4 = ☐

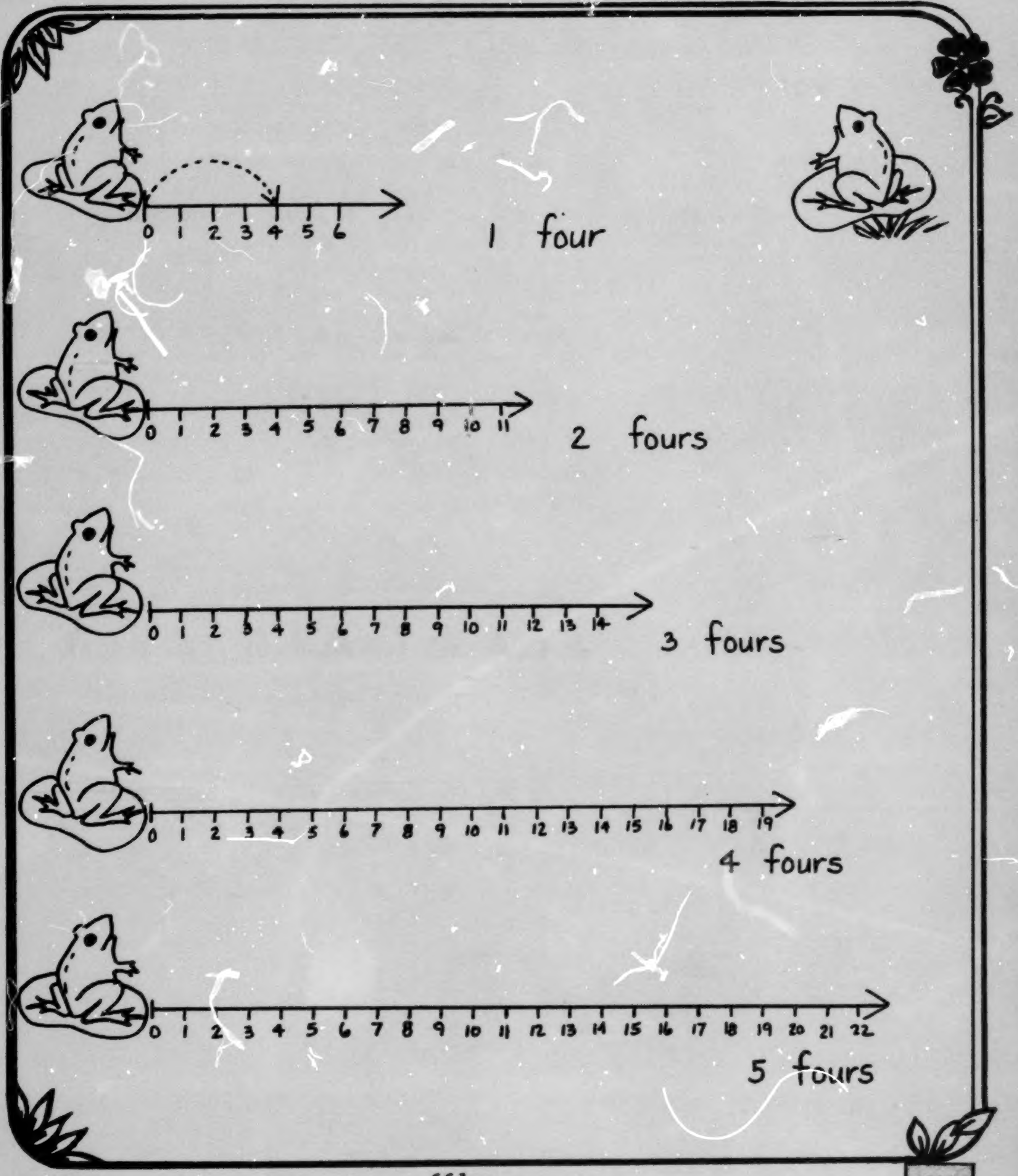
4 FOURS = ☐

4 × 4 = ☐

P.O. 2.04.04.04

NAME:____________________________________**CLASS:**_________**DATE:**_________

Count by fours to help froggie. Mark off the number line.


0 1 2 3 4 5 6
1 four
0 1 2 3 4 5 6 7 8 9 10 11
2 fours
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
3 fours
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
4 fours
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
5 fours

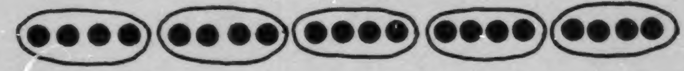
2.05.05 DIVISION FACTS FOR FOURS THROUGH 20

(1-2 lessons)

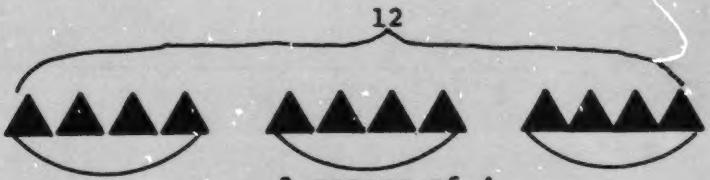
PERFORMANCE OBJECTIVES

The student will be able to...

2.05.05.01A separate up to 20 objects into groups of 4, without a remainder;
e.g.,



2.05.05.02B identify the number for a given set through 20 and tell how many groups of 4 are in that set;
e.g.,



3 groups of 4

2.05.05.03B solve story problems related to skills learned in this module.
e.g.,

There are 12 eggs in a box. Mary puts 4 on each plate. How many plates does she need?

$12 \div 4 = 3$

2.05.05

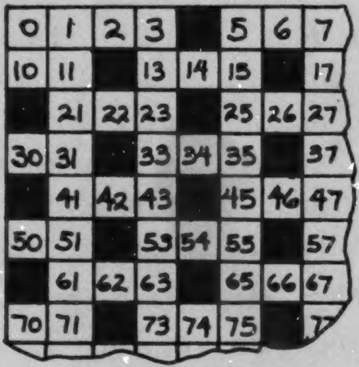
VOCABULARY

TERMS	SYMBOLS
division	÷
divide	

GETTING STARTED

Prepare and distribute a hundreds chart to each student. Say, "Count by four. Color the box for each number counted. What numbers did you color?" (4, 8, 12....)

e.g.,



0	1	2	3	■	5	6	7
10	11	■	13	14	15	■	17
■	21	22	23	■	25	26	27
30	31	■	33	34	35	■	37
■	41	42	43	■	45	46	47
50	51	■	53	54	55	■	57
■	61	62	63	■	65	66	67
70	71	■	73	74	75	■	7

Prepare and distribute number cards in multiples of four from 4 through 40. Ask the students with the cards to stand and scatter themselves around the room while displaying their cards.

Ask the student with the number 4 card to hold a ball of yarn. Say, "We are going to count by four." Give one end of the yarn to the student holding card number 8. Roll out the yarn again until you get to the student holding card number 12. Continue giving the yarn to the remaining students to hold. Make sure that the yarn has been distributed in correct counting order.

When each student holding a number gets to hold the yarn, ask him/her to count in the order in which they were joined. Repeat this procedure using other participants.

2.05.05

2.05.05.01 separate up to 20 objects into groups of 4, without a remainder

STRATEGY 1: Prepare and display a flannelboard, 20 apple cutouts and five basket outlines. Say, "Johnny went apple picking to earn some money. He brought two apples to the orchard manager. The manager told him that he would only buy baskets of apples that had four apples in them." Place one basket outline on the bottom half of the flannelboard. Ask a student to help fill the basket with four apples. Place another outline on the flannelboard and ask a student to fill it with 4 apples. Repeat this procedure until all 20 apples are used. Say, "How many baskets or groups of four apples can we make from 20 apples?" (5)

Repeat this procedure with other stories.

STRATEGY 2: Prepare and distribute an egg carton and a cupful of 20 beans (chips, paper clips) to each student. Say, "Count the beans in the cup. Please separate the beans into the sections of the egg carton. Place four beans into as many sections as possible. We started with 20 beans. We separated the beans into groups of four. How many groups of four beans did we make?" (5 groups)

Repeat this procedure with 16, 12, 8, and 4 beans.

314

2.05.05

2.05.05.02 identify the number for a given set through 20 and tell how many groups of 4 are in that set

STRATEGY 1: Ask twenty students to stand in the front of the room. Ask a student to form five groups from the students. The seated students should count the total number of students in the groups and the number in each group.

Repeat this procedure using 16, 12, 8 and 4 students.

STRATEGY 2: Prepare and distribute bundles of 20 straws to each student. Say, "Count the straws. Separate your straws into piles by putting four straws in each pile. How many piles do you have? (5) Take away one pile. How many straws are left?" (16) Repeat this procedure of subtracting piles of straws, one pile at a time, until there are no straws left. Say, "How many straws did we begin with? (20) How many straws did we take away each time? (4) How many piles of straws did we take away?" (5)

Repeat this procedure, separating sixteen straws into four piles, twelve straws into three piles, eight straws into two piles, and four straws into one pile.

2.05.05.03 **solve story problems related to this module**

STRATEGY 1: Propose the following problem.

> At the aquarium there are twelve goldfish to be put into fishbowls. Each bowl can hold four goldfish. How many fishbowls will be needed?

Say, "How can we find out how many fishbowls we will need?" We will have to separate the fish into fishbowls by groups of four." Draw twelve fish on the chalkboard. Ask a student to draw a circle around four fish, another four fish, then another four. The students should observe that they will need three fishbowls.

Repeat this procedure using other story problems.

STRATEGY 2: Say, "Mother baked 20 cookies. She wants to give the same number of cookies to John, Mary, Bill and Tom. How many cookies will each youngster get? Will there be more or less than 20 cookies for each youngster? (less) About how many cookies will each youngster get?"

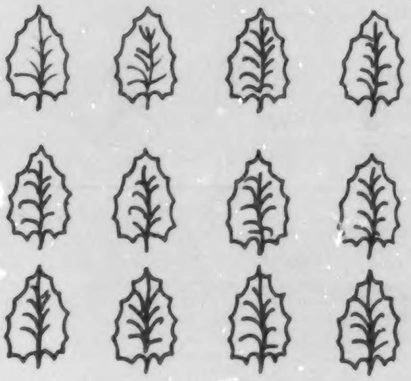
Distribute 20 discs to each student. Say, "Count the number of discs. Separate them into piles for each youngster. Let's subtract piles of 4 until no discs remain. How many discs did we start with? (20) How many discs were in each group? (5) How many groups did we have? (4) How many cookies did Mother bake? (20) How many cookies did each youngster get?" (5)

Repeat this procedure using other story problems.

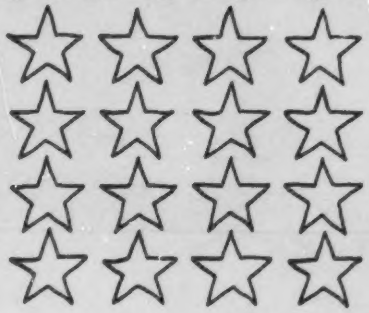
P.O. 2.05.05.01

NAME: ______________________ CLASS: __________ DATE: ________

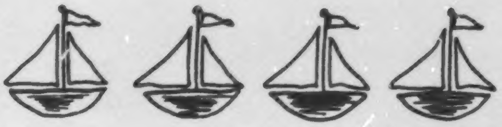
Draw a ring around groups of 4. Fill in the blanks for each problem.



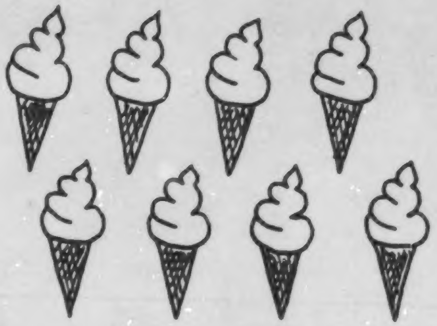
How many groups of 4? ______



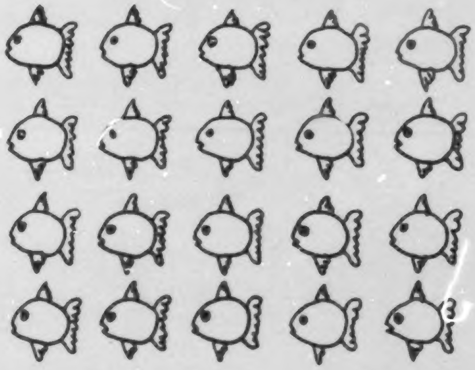
How many groups of 4? ______



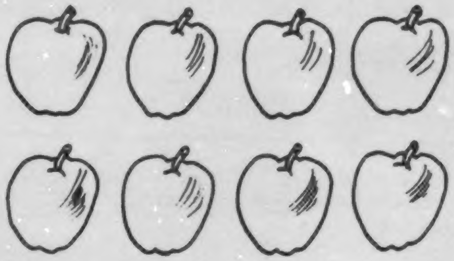
How many groups of 4? ______



How many groups of 4? ______



How many groups of 4? ______

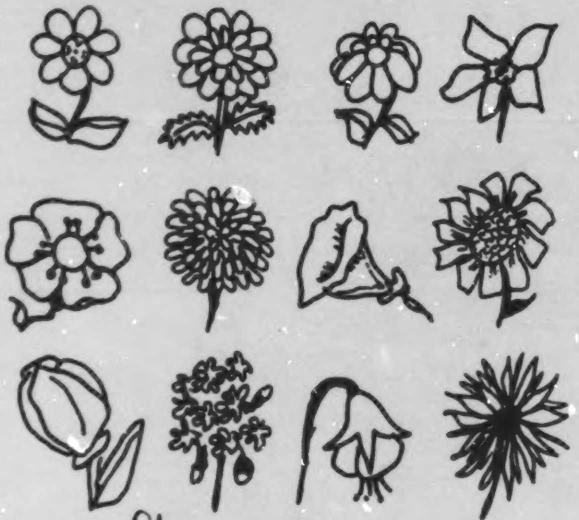


How many groups of 4? ______

P.O. 2.05.05.02

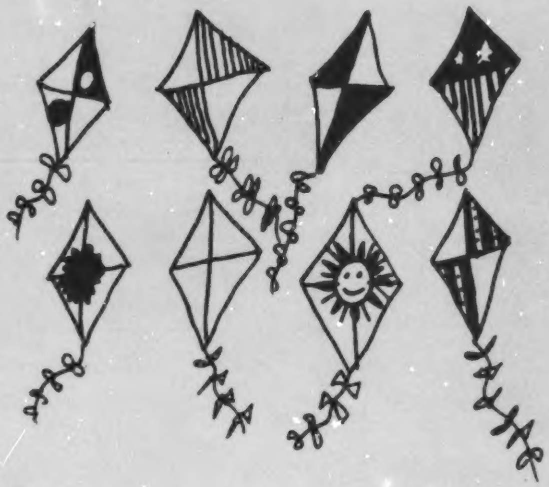
NAME: ______________________________ CLASS: __________ DATE: ________

Circle groups of 4. Fill in the blank.



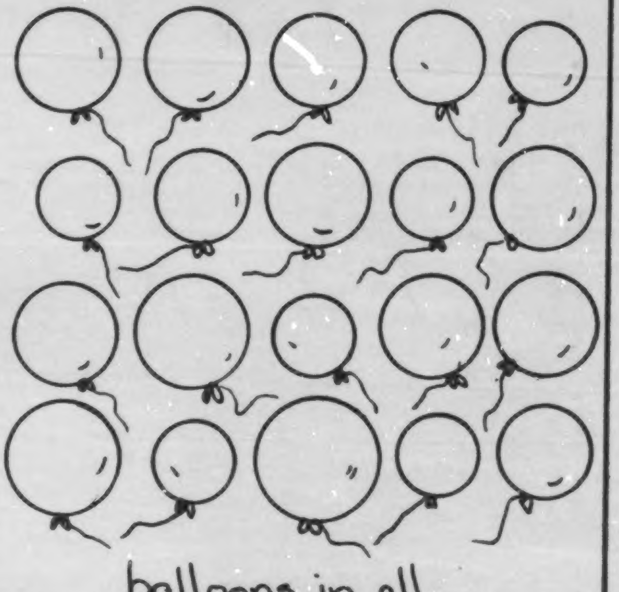
_____ flowers in all.

_____ groups of 4.



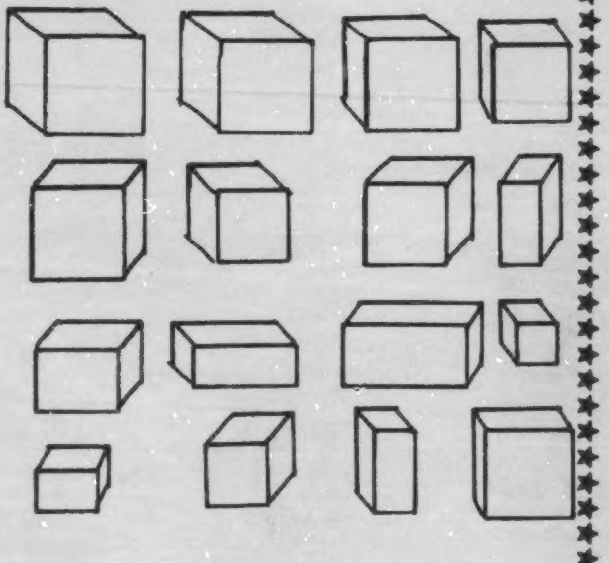
_____ kites in all.

_____ groups of 4.



_____ balloons in all.

_____ groups of 4.



_____ boxes in all.

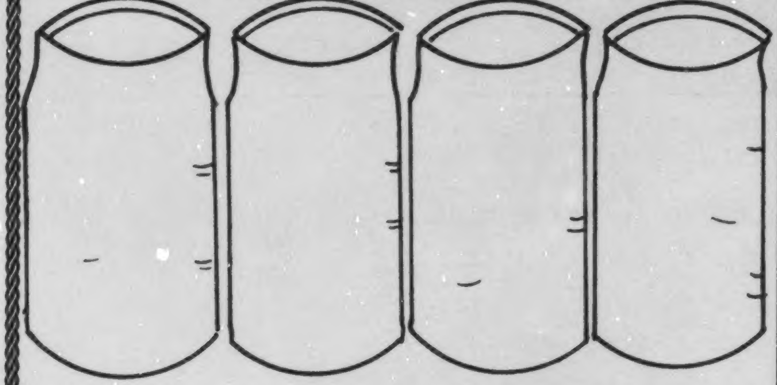
_____ groups of 4.

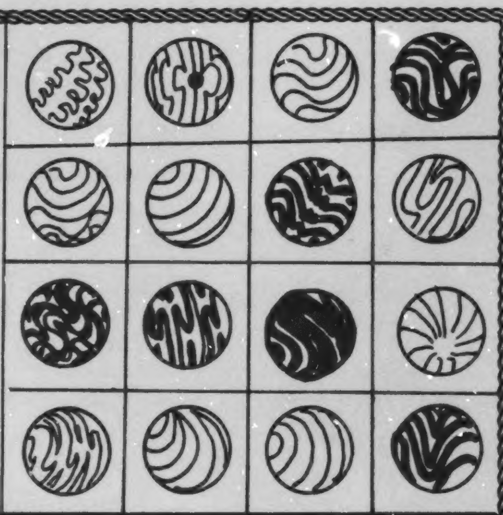
P.O. 2.05.05.03

NAME: ______________________ CLASS: ________ DATE: ________

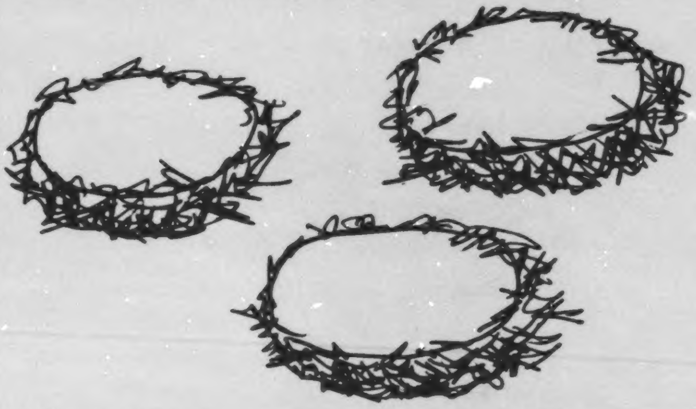
Solve the story problems.

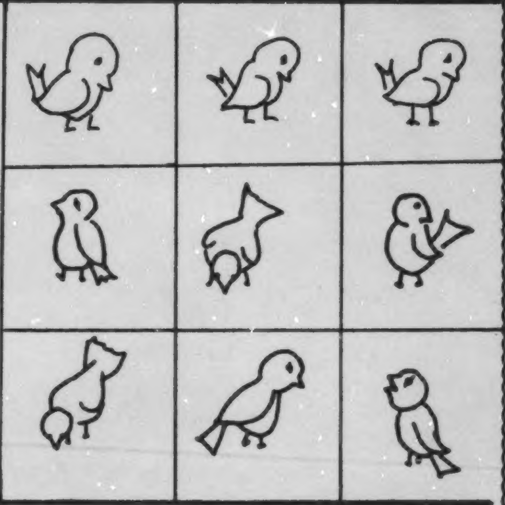
There are 16 marbles in all. There are 4 jars. How many marbles in each jar?



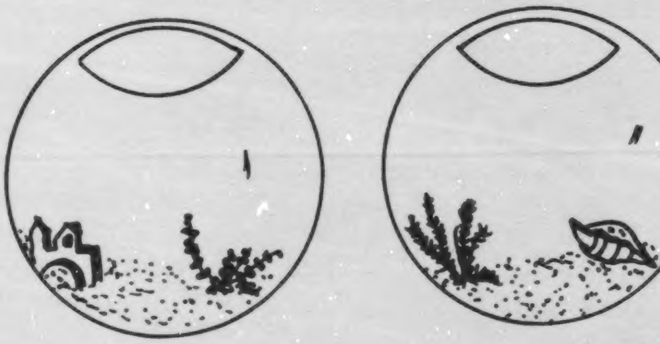


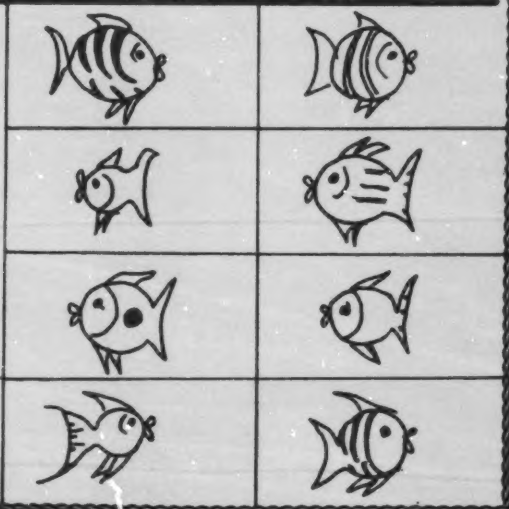
There are 9 birds in all. There are 3 nests. How many birds in each nest?





There are 8 fish. There are two bowls. How many fish in each bowl?





2.10.13 TIME-QUARTER HOUR, MINUTES AND SECONDS

(2-3 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.10.13.01A identify relationships between seconds and minutes, and minutes and hours;

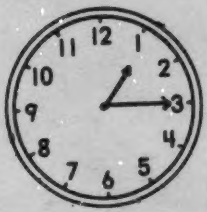
e.g.,

60 seconds = 1 minute
60 minutes = 1 hour

2.10.13.02A read and write time in terms of quarter hours on standard and digital clocks;

e.g.,

quarter after 1 (1:15)



2.10.13.03A solve story problems related to skills learned in this module.

e.g.,

Mother cooked a one minute egg.
How many seconds did she cook the egg?

320

2.10.13

VOCABULARY

TERMS

digital
seconds

GETTING STARTED

Prepare and display a toy clock. Distribute individual clocks to each student. Say, "We begin reading at nine o'clock. Show 9:00 on your clock. We do math at ten o'clock, lunch at eleven thirty..." Show the hour and the half-hour on the demonstration clock. Write 1:00. Ask a student to read it. Write 1:30. Select students to read the time and show it on their clock.

Prepare a demonstration clock. Practice skip-counting by 5 through 60. Move the large hand of the clock to the corresponding numerals. Say, "Why do we count by 5 as we move the long hand?" (We are counting every 5 minutes in an hour.)

2.10.13

2.10.13.01 **identify relationships between seconds and minutes, and minutes and hours**

STRATEGY 1: Prepare and display a clock with a second hand. Say, "Johnny eats lunch from 12 o'clock until 1 o'clock. How many minutes does he get for lunch? (60 minutes) How do we know it is 60 minutes?" (It takes 60 minutes to go from 12 o'clock to 1 o'clock.) Ask a student to count the minute marks on the clock.

Write 60 minutes = 1 hour. Set the clock with the second hand. Point to the second hand and say, "Does the second hand move faster or slower than the minute hand? (faster) How many marks does the second hand touch as it goes around the clock? (60 dots) Let's stop the clock and mark the spot where the minute hand is." Set the clock for 12:00. Start the clock. Watch the second hand go around the clock. Record where the minute hand is after every 60 seconds, e.g., 12:01. Say, "There are 60 seconds in a minute. Which is faster a second or a minute? A minute or an hour?"

STRATEGY 2: Prepare and display a clock with a second hand. Say, "Count from 1 through 60 as the second hand touches each mark. How many seconds are there in a minute?" Record the information:

60 seconds = 1 minute
1 minute = 60 seconds

Say, "How long would we have to wait for the minute hand to go around the clock?" (60 minutes) Write the following on the chalkboard.

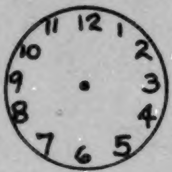
60 minutes = 1 hour
1 hour = 60 minutes

2.10.13

2.10.13.02 **read and write time in terms of quarter hours on standard and digital clocks**

STRATEGY 1: Prepare and distribute paper circles and scissors to each student. Say, "We are going to cut these circles into four equal parts. How can we do that?" (We cut the circles in half first and then each half in half.) After the circles are cut say, "What do we call each piece?" ($\frac{1}{4}$ or one quarter) Distribute another paper circle to each student. Say, "We are going to draw a face of a clock on the circle." Draw the following illustration on the chalkboard.

e.g.,



Say, "What does each number on the clock represent when the minute hand points to it? ...when the hour hand points to it? (Each number represents five minutes.) When the minute hand points to the three, how many minutes is it? (It is 15 minutes after the hour.) Place one of your quarters on the clock like this." Demonstrate that the piece covers the first quarter of the clock. Say, "What part of the clock have we covered? (One quarter of the clock or one quarter of the hour.) When the minute hand is on the three, we can say fifteen after the hour or a quarter after the hour." Using a cardboard clock with hands, show the following times: 1:15, 3:15, 6:15. Ask several students to tell the time in minutes and as a quarter after.

Repeat this procedure using a digital clock. The same procedure may be used to show quarter to the hour by covering the area from the 9 to the 12 with one quarter.

2.10.13

STRATEGY 2: Prepare and distribute a rexographed clock and a ruler to each student. Say, "We are going to draw a line through the center of the clock connecting the twelve and the six." Demonstrate on the chalkboard. When the students have finished, say, "What have we done to the clock? (We have divided the clock in half.) Now we are going to draw a line through the center of the clock connecting the three and the nine." Demonstrate on the chalkboard. Say, "We have divided the clock into four equal parts called quarters. When the minute hand goes from the twelve to the three, how much time has passed? (15 minutes) Look at your paper clocks. How can we show 15 minutes in another way?" (15 minutes is one quarter of the clock.) Using standard and digital clocks, illustrate the following times: 2:15, 7:15, 8:15. Ask several students to tell time as 15 minutes after and a quarter after.

Repeat this procedure for quarter to the hour by showing that 9 to 12 is one quarter before the next hour.

2.10.13.03 **solve story problems learned in this module**

STRATEGY 1: Prepare and display a clock with a second hand. Say, "Which hand is the minute hand? Which hand is the hour hand? How many minutes make one hour? (60 minutes) A minute is a small amount of time. Who can tell us something we can do in one minute? Can we measure time in smaller amounts than minutes? (seconds) How many seconds equal one minute?" (60 seconds)

STRATEGY 1: cont'd

Say, "It took Billy two minutes to run around the gym three times. How many seconds was Billy running?" Before you accept an answer, ask the students to think about the following questions.

1. What does the problem want to know?
2. What information is given?
3. What information do I need to find out?

Reread the problem. Say, "Two minutes equals how many seconds?" (120 seconds) Therefore, 120 seconds is the correct answer.

Repeat this procedure with other problems.

STRATEGY 2:

Prepare and distribute a clock face to each student. Say, "The large hand is the minute hand. It takes thirty minutes to make half an hour. It takes fifteen minutes to make a quarter of an hour. Bill's favorite TV program begins at 4:00. It lasts for fifteen minutes. What time does it end? Set your clocks at 4:00. Move your minute hand fifteen minutes. What time is it?" (4:15 or a quarter after 4)

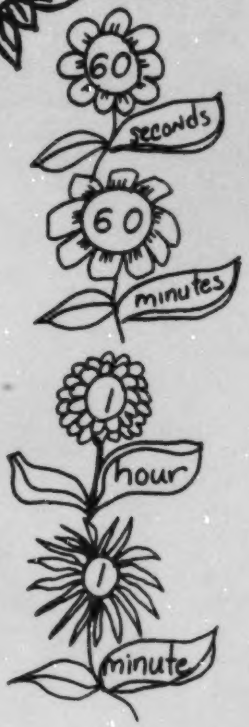
Repeat this procedure with similiar time problems.

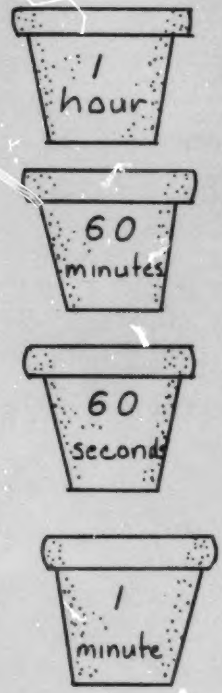
P.O. 2.10.13.01

NAME:______________________________ CLASS:________ DATE:________

Part I - Put the flower in the pot by matching the time relationships.

Part II- Fill in the missing spaces to make the sentences equal.


60
seconds
60
minutes
1
hour
1
minute


1
hour
60
minutes
60
seconds
1
minute

____ seconds = ___ minute

____ minutes = ___ hour

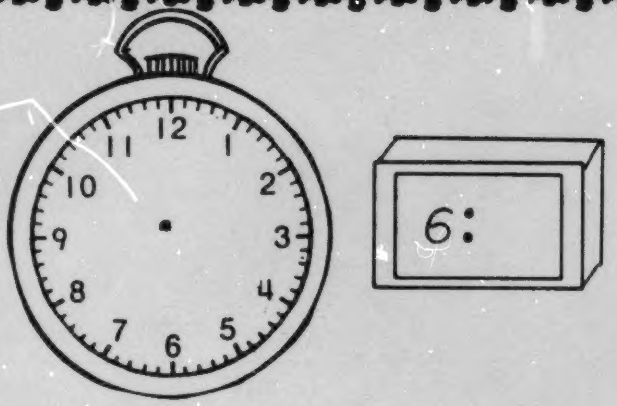
____ hour = ___ minutes

____ minute = ____ seconds

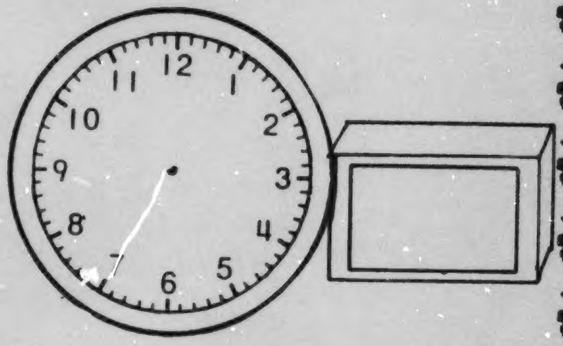
P.O. 2.10.13.02

NAME: ______________________ **CLASS:** __________ **DATE:** ________

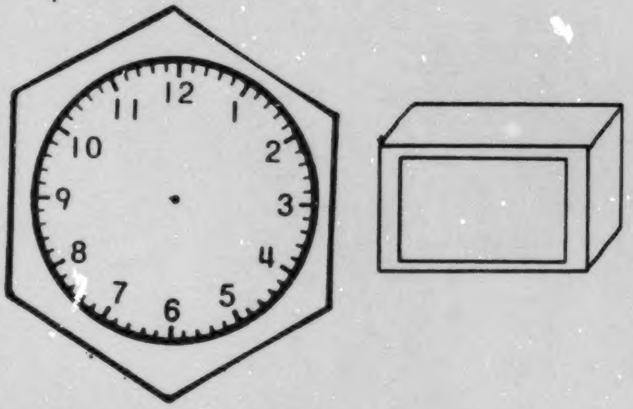
Draw the hands to show the correct time. Write the time in the digital clocks.



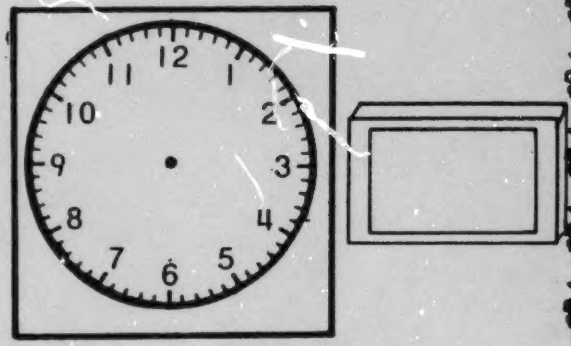
quarter to 7



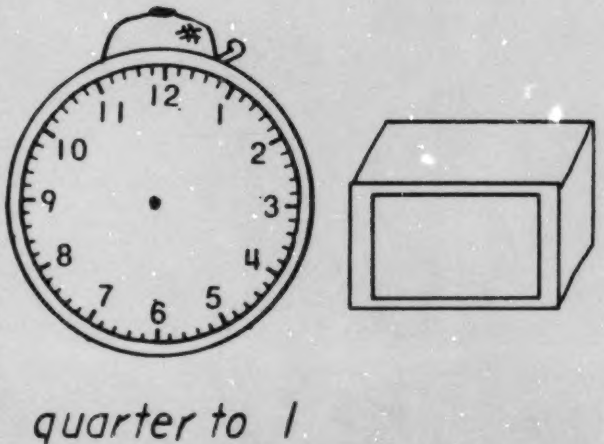
quarter after 9



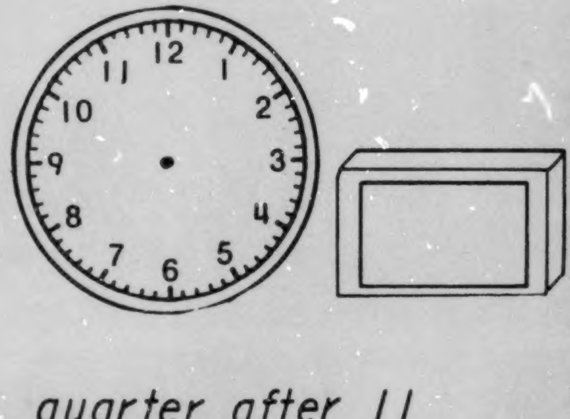
quarter after 3



quarter to 5



quarter to 1



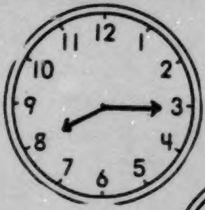
quarter after 11

P.O. 2.10.13.02

NAME: ______________________________ CLASS: __________ DATE: ________

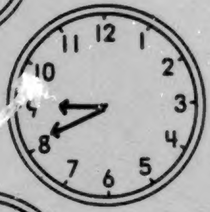
Hector's mother went away for the day. She left him a list of things to do and pictures of clocks to tell him when to do them. Help Hector by writing the time next to the clock in two different ways. The first one is done for you.

1 Eat breakfast.



quarter after 8
(8:15)

2 Clean your room.



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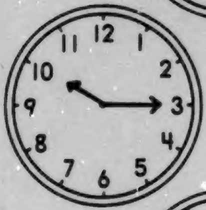
3 Go to the supermarket.



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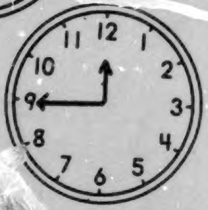
4 Eat lunch.



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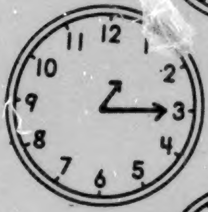
5 Go to the library.



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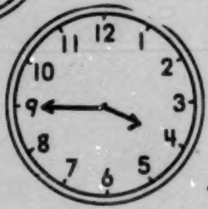
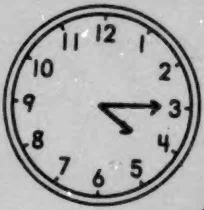
6 Walk the dog.



____

7 Practice the piano.



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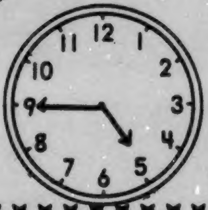
8 Set the table for dinner.



____

P.O. 2.10.13.03

NAME: ______________________________ CLASS: ________ DATE: ______

Solve each problem.

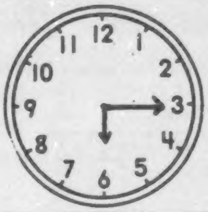
Father worked on his car for 3 minutes. How many seconds did he work?

____

Tommy walked around the block in 30 seconds. How many minutes did it take?

____

Mother saw that her kitchen clock had stopped. She looked at her watch. It looked like this



What time is it?

____

Susan ran in a school race. She finished in 120 seconds. How many minutes did it take her to finish the race?

____

Unit 62

2.06.02 IDENTIFY FRACTIONAL PARTS OF A NUMBER OF THINGS ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$)

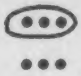
(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

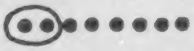
2.06.02.01A separate a group, through 10 objects, into two equal groups;

e.g.,


one half of six

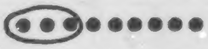
2.06.02.02A separate a group, through 20 objects, into four equal groups;

e.g.,


one fourth of eight

2.06.02.03A separate a group, through 15 objects, into three equal groups;

e.g.,


one third of nine

2.06.02.04A solve story problems related to skills learned in this module.

e.g.,

Jose and Juan went trick or treating on Halloween. They shared their treats equally. They received 6 boxes of raisins. What fractional part of the raisins did Juan receive?

2.06.02

VOCABULARY

TERMS

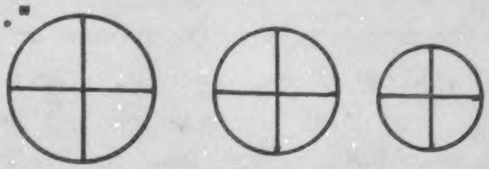
equal
one half
one third
one fourth

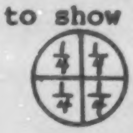
GETTING STARTED

Prepare and distribute to each student a circle, square, a pair of scissors, crayons, paste, and a sheet of rectangles (thirds of the square) and wedges (thirds of the circle). Draw more thirds than are necessary to make one whole, e.g., 5 rectangles and 4 wedges. Say, "Color in the shapes on your sheet. Cut out the rectangular pieces. How many pieces can fit on the square? We need three rectangles to make one whole square. What is the fractional name for each rectangular piece? Write $\frac{1}{3}$ on each piece. How many thirds are needed to complete the square? Paste the three thirds on the square." Repeat this procedure using the circle and wedges.

Repeat this procedure for halves and fourths with appropriate materials.

Prepare and distribute a duplicating sheet of varying size wedges (2 of each), drawing paper, scissors, and paste to each student. Say, "We are going to make puzzles. Cut out the shapes on your paper. There are enough pieces to make three circles. When you have found the pieces that fit together to make a circle, paste them on the drawing paper."
e.g.,



When the puzzles have been completed, say, "How many pieces did you need to make the smallest circle? What is the fractional name for each piece? Label each piece $\frac{1}{4}$. Next to the smallest circle, write the fraction to show the number of pieces used to make the whole circle, e.g.,  = $\frac{4}{4}$." Repeat this procedure with the other two circles.

2.06.02

2.06.02.01 **separate a group, through 10 objects, into two equal groups**

STRATEGY 1: Prepare and display a flannel board with fruit cutouts, e.g., 3 apples, 3 oranges. Ask two students to share the fruit cutouts equally. They can do this by taking one for me, one for you. Say, "How many pieces of fruit do each of you have? (3) How many groups of fruit do we have? (2) Are the groups the same size? (Yes) We started with 6 pieces of fruit. We separated this group into two equal groups of three. One half of six is three."

Repeat this procedure with other amounts of objects.

STRATEGY 2: Prepare and distribute ten counting objects to pairs of students. Draw eight squares on the chalkboard. Say, "I would like someone to circle one half of this group. How many squares are in each group?"

Repeat this procedure for other even amounts of counters.

2.06.02.02 **separate a group, through 20 objects, into four equal groups**

STRATEGY 1: Divide the class into groups of four. Distribute 20 raisins to each group. Say, "Share your raisins equally. Each student should get the same amount. Use the one for me, one for you counting technique. How many students are in each group? (4) How many raisins did each student get? (5) Each student got one fourth of the 20 raisins." Distribute 16 counters to each group. Say, "Share the counters

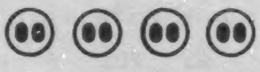
STRATEGY 1: cont'd

equally. How many students are in your group? (4) How many counters did each student get? (4) Four is one fourth of 16."

Repeat this procedure with 4, 8, and 12 counters.

STRATEGY 2: Draw a set of eight boxes on the chalkboard. Say, "I want to separate these boxes into four groups. Each group should have the same amount of boxes." Circle sets of two boxes to illustrate the grouping of four equal sets.

e.g.,



Say, "How many groups do we have? (4) How many boxes in each group? (2) Two is one fourth of 8."

Repeat this procedure with 4, 12, 16 and 20 boxes.

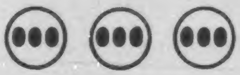
2.06.02.03 **separate a group, through 15 objects, into three equal groups**

STRATEGY 1: Divide the class into groups of three. Distribute twelve crayons to each group. Say, "Share the crayons equally. Each student should get the same number of crayons. You can use a one for you, one for me counting routine. With how many students did we share our twelve crayons? (3) How many crayons did each student get? (4) One third of twelve is four."

Repeat this procedure with 3, 6, 9 and 15 crayons.

STRATEGY 2: Display a flannel board with nine dot cutouts. Say, "How much is one third of these dots?"

e.g.,



STRATEGY 2: cont'd

Use yarn to circle the sets of three. Say, "How many sets do we have? (3) How many dots are in each set? (3) How much is one third of 9?" (3)

Repeat this procedure with 3, 6, 12 and 15 dots.

2.06.02.04 **solve story problems related to skills in this module**

STRATEGY 1: Write the following problem on the chalkboard:

> Mary and Sue went to the store. They bought 6 pencils. They shared the pencils equally. What fractional part of the pencils did Mary receive?

Display a flannel board with six pencil cutouts. Say, "How many pencils do you see? When we divide things into two equal parts, what is each part called? (one half) Who can show us how many pencils each girl received?" (3)

Repeat this procedure with similiar problems.

STRATEGY 2: Divide the class into groups of four. Distribute a shoe box containing twelve crayons to each group. Propose the following problem.

> During art, Mrs. Brown divides the class into groups of four. She gives each group a box of twelve crayons. How many crayons will each student get?

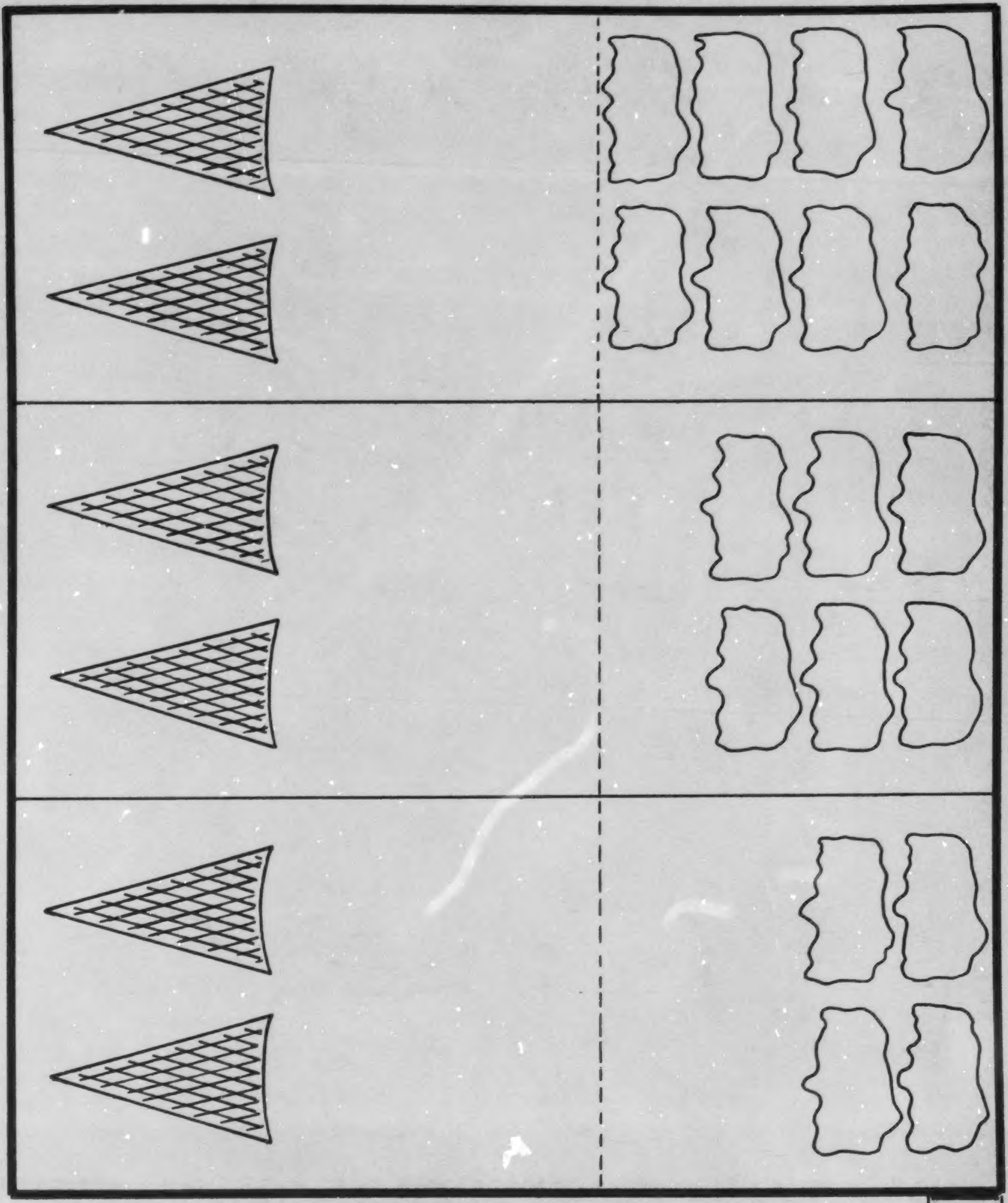
Say, "Share the crayons equally. How many crayons did each student in the group get? If there are four students in a group what part will each student get? (one fourth) How many crayons will each student get?" (3)

Repeat this procedure with similiar problems.

P.O. 2.06.02.01

NAME: ______________________ CLASS: __________ DATE: ________

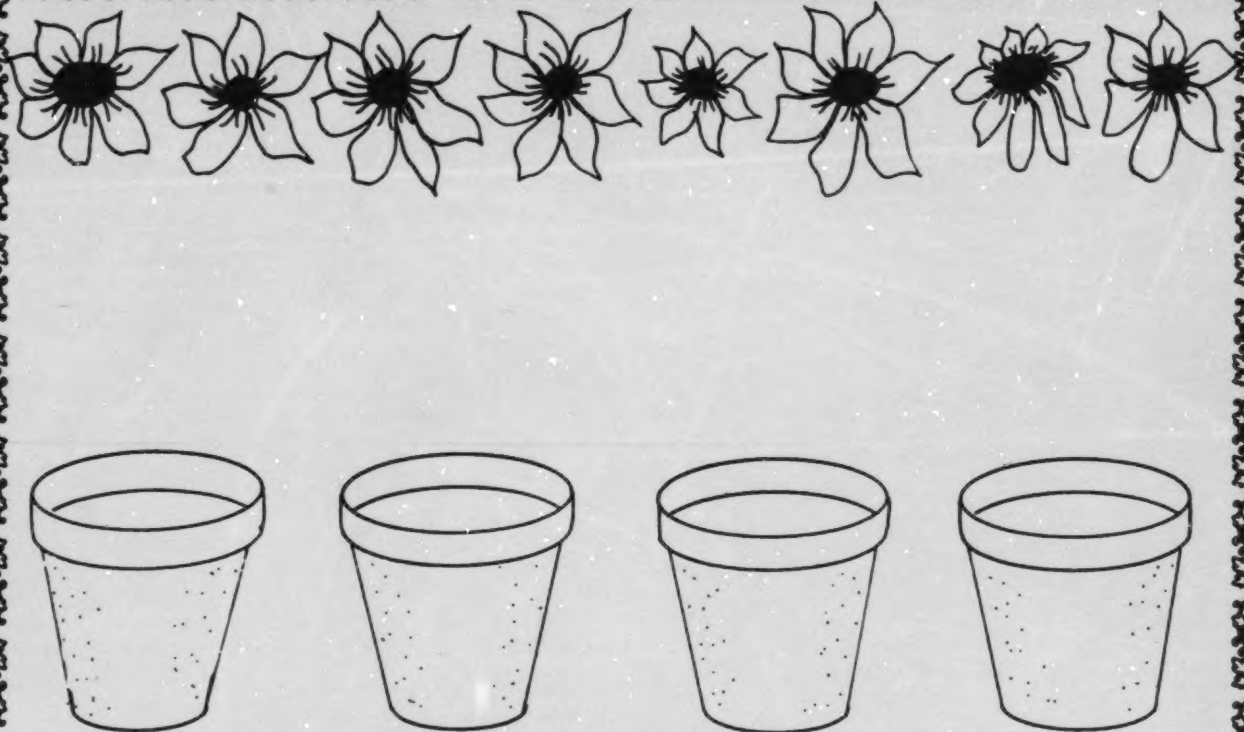
Cut out the scoops of ice cream. Paste them on the cones.
Give each cone the same number of scoops.

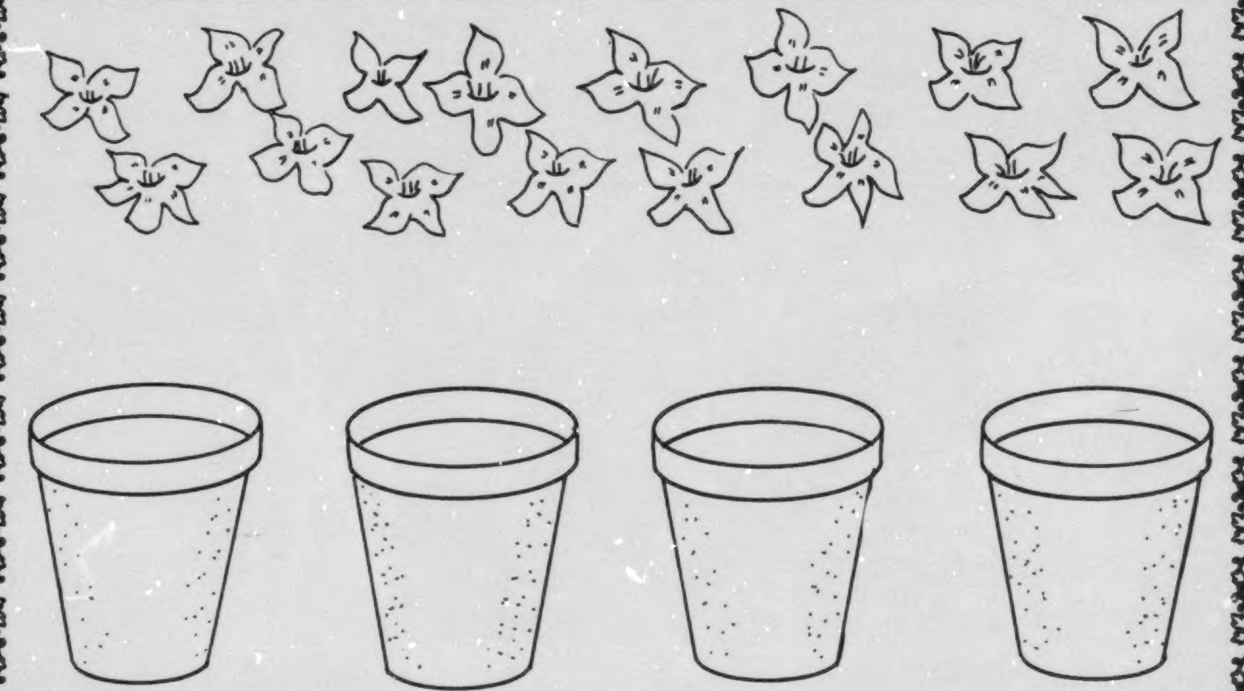


P.O. 2.06.02.02

NAME: ______________________________ CLASS: ________ DATE: ________

Give the same number of flowers to each pot. Write the numeral that tells how many flowers are in each pot on the pot. Draw the flower stems to each pot.

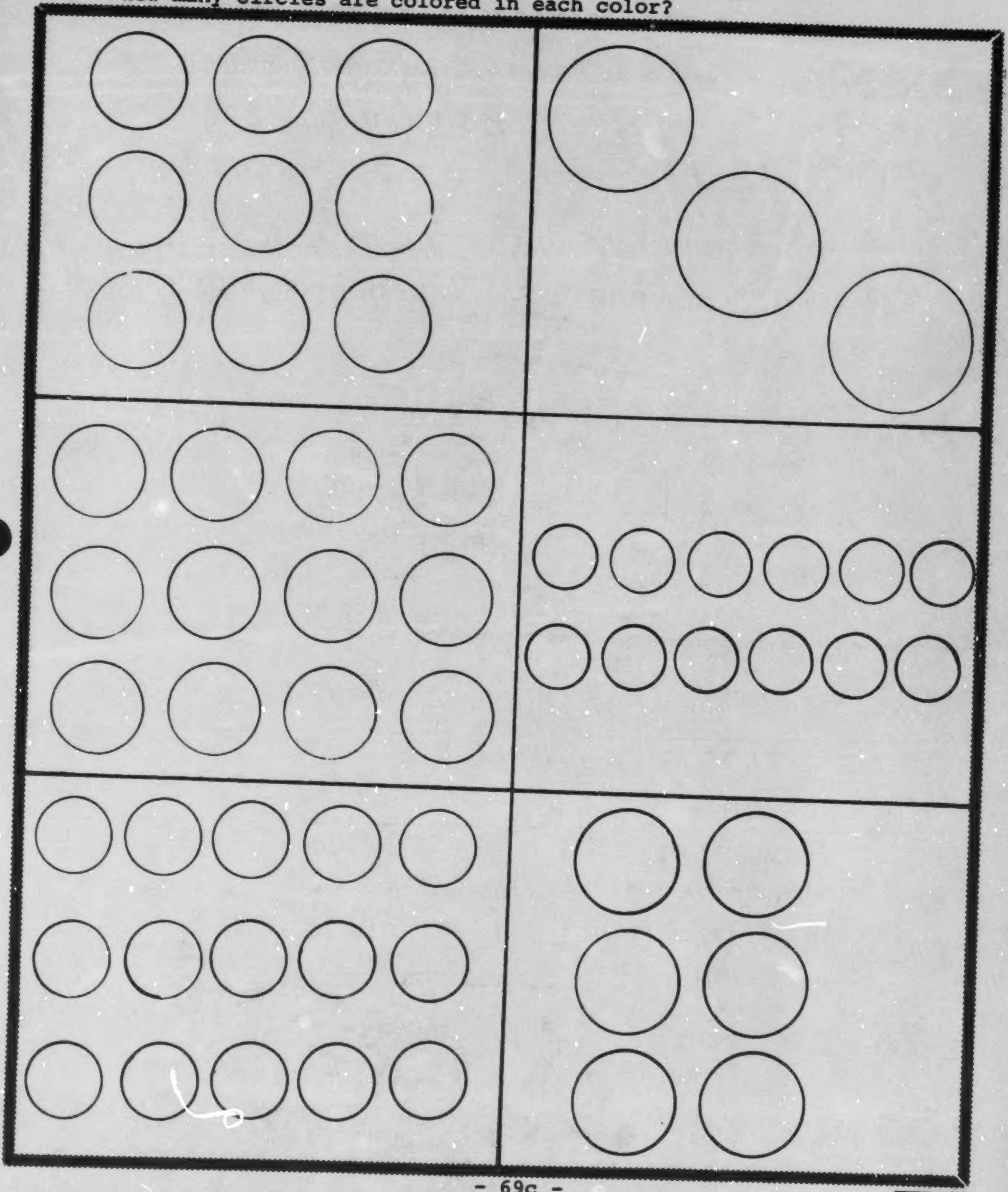




P.O. 2.06.02.03

NAME:____CLASS:__________DATE:________

Use your crayons to color the circles. Color the same number of circles red, green, and yellow in each box. How many circles are colored in each color?



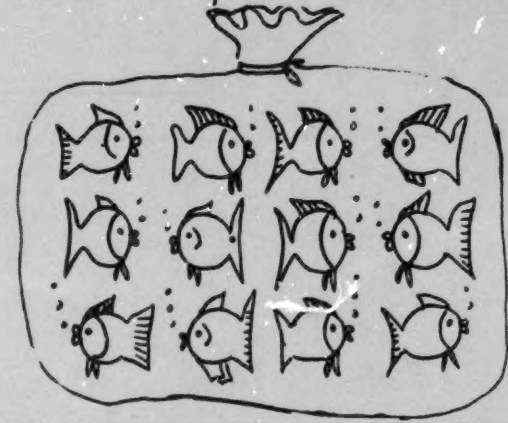
P.O. 2.06.02.04

NAME: ____________________ CLASS: ________ DATE: ________

Read each story problem. Answer the questions.

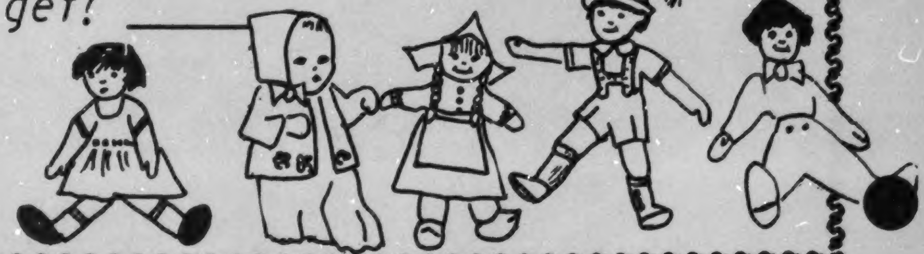
Bob, Bill and Ben went to the pet shop to buy fish. The salesgirl put 12 fish in one bag. When they got home the boys shared the fish.

1. How many fish did each boy get? ______
2. What fractional part did each boy get? ____



Janet and Sue went shopping. They bought 6 dolls. When they got home the girls divided the dolls equally.

1. How many dolls did Janet get? _____
2. How many dolls did Susan get? _____
3. What fractional part of the dolls did each girl get? ______



Unit 63

2.04.05 COMMUTATIVE PROPERTY OF MULTIPLICATION

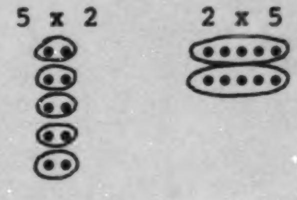
(1-2 lessons)

PERFORMANCE OBJECTIVES

The student will be able to...

2.04.05.01A apply the commutative property of multiplication to the two times table through five groups of two;
e.g.,

5 x 2 = 10
2 x 5 = 10



2.04.05.02B apply the commutative property of multiplication to the three times table through five groups of three;
e.g.,

5 x 3 = 15 1 x 3 = 3
3 x 5 = 15 3 x 1 = 3
5 x 3 = 3 x 5 1 x 3 = 3 x 1

2.04.05.03B apply the commutative property of multiplication to the four times table through five groups of four.
e.g.

5 x 4 = 20
4 x 5 = 20
5 x 4 = 4 x 5

2.04.05

VOCABULARY

TERMS	SYMBOLS
commutative	axb = bxa

GETTING STARTED

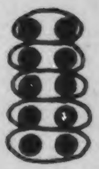
Ask ten students to stand in pairs. Ask the first pair to stand in front of the room, say "2". Write 2 on the chalkboard. Call the second pair and say "4". Write +2 next to the 2 on the chalkboard. Continue until all 10 students have come to the front. Write 2 + 2 + 2 + 2 + 2 = 10. Say, "How many groups of 2 do you see? (5) I see 5 groups of 2 or 5 x 2 = 10." Write 5 x 2 = 10 on the chalkboard.

Repeat this procedure with groups of three. Ask nine students to come to the front of the room in groups of three. Say, "3, 6, 9." Write 3 + 3 + 3 = 9. Say, "How many groups of three do you see? We see three groups of three." Write 3 x 3 = 9 on the chalkboard.

Repeat this procedure with groups of fours and fives.

Prepare and distribute a set of twenty-five chips, beans or straws to each student. Write 5 x 2 on the chalkboard. Say, "What does 5 x 2 mean? It means five groups of two. Show five groups of two on your desk. How many chips did you use altogether?" (10) Ask a student to count the groups by two. Write 5 x 2 = 10. Continue writing algorithms through 5 x 5 and drawing arrays to show the algorithms.

e.g.,



5 x 2 = 10

340

2.04.05

2.04.05.01 **apply the commutative property of multiplication to the two times table through five groups of two**

STRATEGY 1: Prepare and distribute to each student ten chips, beans or sticks. Say, "Mrs. Green had five tables. She asked two students to sit at each table. Show this on your desk with your chips, e.g., 00 00 00 00 00. How many groups do you have on your desk? (5) How many chips are in each group? (2) How would we write that on the chalkboard? (Write 5 x 2 = 10.) Does 5 x 2 equal the same amount as 2 x 5? Let's find out with the chips on our desks. Show 5 x 2. Now show 2 x 5 by rearranging your chips. Did you need more or fewer chips? Therefore, we know that 2 x 5 equals the same amount as 5 x 2. We call this the commutative law."

Repeat this procedure with 4 x 2 = 2 x 4, 3 x 2 = 2 x 3, and 1 x 2 = 2 x 1.

STRATEGY 2: Place two chairs together at the front of the classroom. Ask two students to come to the front of the room and sit on these chairs. Say, "How many students do you see? (2) How many groups of chairs do you see? (1) How many students are in that group? (2) I see one group of 2 or 1 x 2 students. Let's rearrange these chairs." Move the chairs apart. Say, "How many groups do you see? (2) How many students in each group? (1) I see two groups with one student (2 x 1) in each group. Is the number of students the same? Therefore, 2 x 1 = 1 x 2."

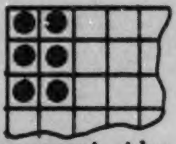
Repeat this procedure using three sets of two students, through five sets of two students.

2.04.05

2.04.05.02 apply the commutative property of multiplication to the three times table through five groups of three

STRATEGY 1: Prepare and distribute large graph paper and counters to each student. Say, "Place two chips in a horizontal row on your graph paper. Make 2 more rows of chips."

e.g.,



Say, "Let's count the total number of chips we used. (6) How many rows of chips do we have? (3) How many chips are in each row? (2) We can write 3 rows of 2 chips as 3 x 2." Write 3 x 2 = 6 on the chalkboard. Say, "Take the chips off your graph paper and make a new arrangement. Put three chips in one row and three more chips in another row. How many chips did we use? (6) We have two rows of three chips each." Write 2 x 3 = 6 under 3 x 2 = 6. Say, "Are 2 x 3 and 3 x 2 equal?" (Yes)

Repeat this procedure for 1 x 3, 3 x 1, 4 x 3, 3 x 4 and 5 x 3, 3 x 5.

STRATEGY 2: Ask six students to stand, choose a partner and form a double line. Say, "How many groups do we have? (3) How many students are in each group? (2) How many students are there in all?" Write 3 x 2 = 6 on the chalkboard while saying, "3 groups of 2 = 6." Ask these students to sit down and choose six other students.

Say, "Join hands with 2 students from the group of 6. How many groups do we have? (2) How many students are in each group? (3) How many in all?" (6) Write 2 x 3 = 6 and 3 x 2 = 6 on the

STRATEGY 2: cont'd

chalkboard. Say, "2 x 3 = 6 and 3 x 2 = 6 are equal."

Repeat this procedure for multiplication facts of three through fifteen.

2.04.05.03 apply the commutative property of multiplication to the four times table through five groups of four

STRATEGY 1: Place eight magnetic discs in two rows on the chalkboard. Say, "How many discs do you see? (8) How many groups of four do you see?" (2) Write 2 x 4 = 8. Say, "Let's rearrange these same discs into another pattern. How many discs and how many groups do you see?"

e.g., ●●●● ●●
●●●● ●●
●●
●●

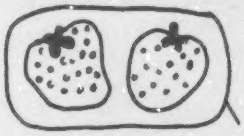
Repeat this procedure with 3 x 4 = 4 x 3, 5 x 4 = 4 x 5, and 1 x 4 = 4 x 1.

STRATEGY 2: Prepare and distribute to each student a sheet of graph paper and crayons. Write 2 x 4 on the chalkboard. Say, "What does 2 x 4 mean? (2 groups of 4.) Make this picture on the graph paper. How many X's did you make?" (8) Write 2 fours = eight and 2 x 4 = 8 on the chalkboard. Say, "Let's do the same for 4 x 2. What picture will we draw? (4 rows of 2) How many rows will have X's? How many X's in each row? How many X's did you make in all? What does 2 x 4 and 4 x 2 equal?" (8)

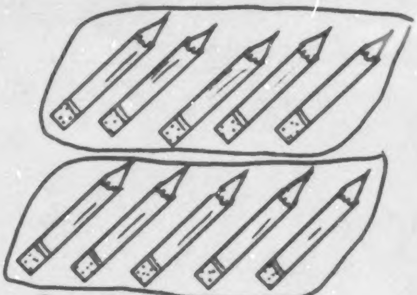
P.O. 2.04.05.01

NAME:______________________________ CLASS:________ DATE:________

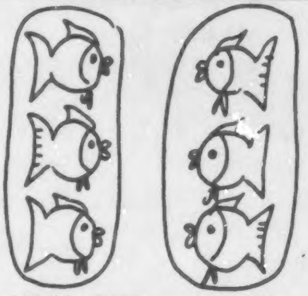
Draw the picture to go with the number sentence. Match the number sentence. Match the pictures. Write a multiplication example to match each picture.



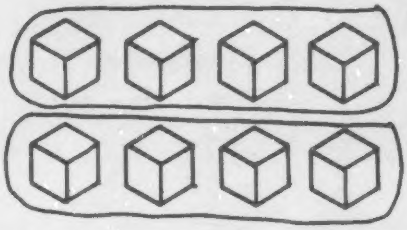
1 two or 1 × 2



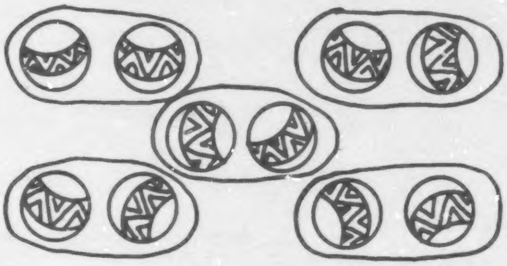
2 fives or ___ × ___



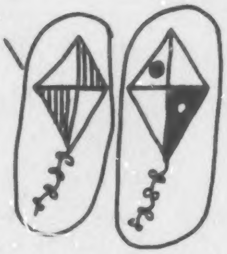
3 twos or ___ × ___



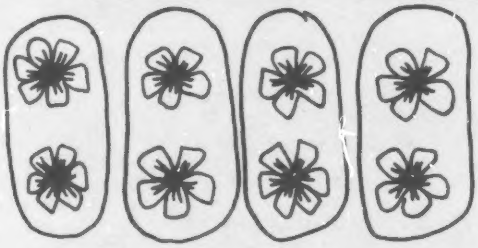
2 fours or ___ × ___



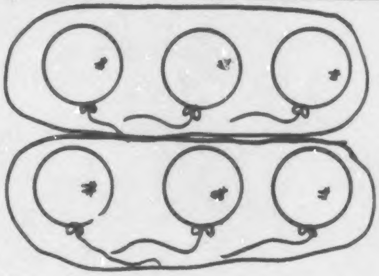
5 twos or ___ × ___



2 ones or 2 × 1



4 twos or ___ × ___

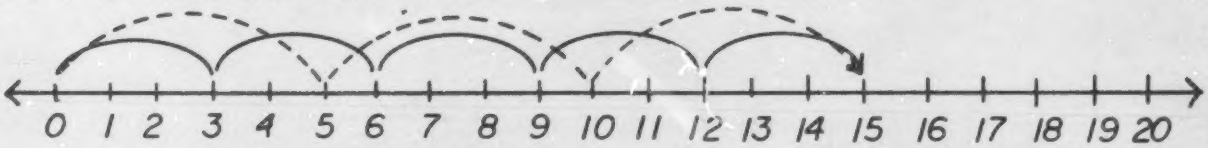


2 threes or ___ × ___

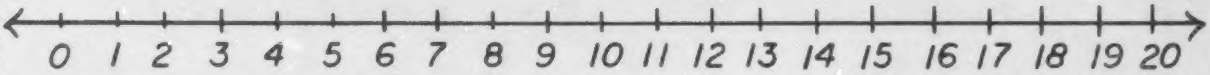
P.O. 2.04.05.02

NAME: ____________________ CLASS: __________ DATE: ________

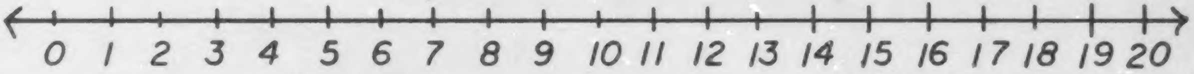
Draw the jumps on the number line.


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

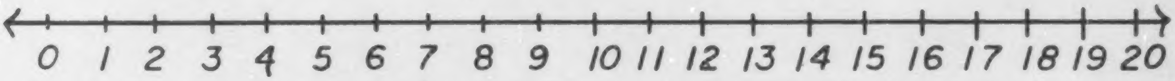
Show 5 × 3 and 3 × 5


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

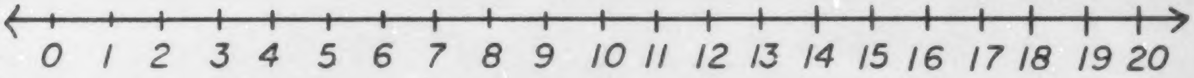
Show 4 × 3 and 3 × 4


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

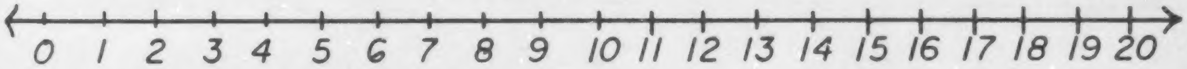
Show 2 × 3 and 3 × 2


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

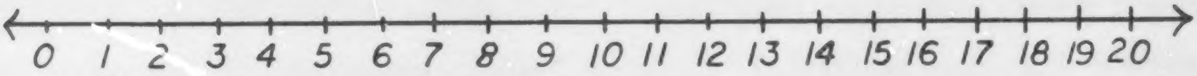
Show 1 × 3 and 3 × 1


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Show 2 × 5 and 5 × 3


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Show 4 × 2 and 2 × 4

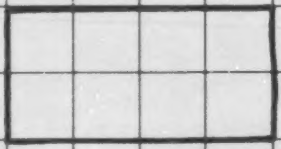

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Show 1 × 2 and 2 × 1

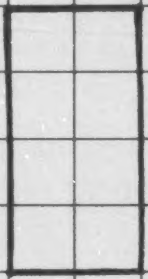
P.O. 2.04.05.03

NAME:______________________________ CLASS:__________ DATE:________

Draw the pictures to go with each number sentence. Write the number sentence under the picture you have drawn.



2×4=8



4×2=8

Show

4×2 = 2×4

3×4 = 4×3

5×4 = 4×5

1×4 = 4×1

Unit 64

2.05.06 DIVISION AND MULTIPLICATION AS INVERSE OPERATIONS

(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.05.06.01A	recognize the division symbol (÷); e.g., 6 ÷ 3 = 2
2.05.06.02A	recognize that multiplication and division are inverse (opposite) operations; e.g., 2 x 5 = 10 10 ÷ 2 = 5 5 x 2 = 10 10 ÷ 5 = 2
2.05.06.03A	demonstrate related facts for number families. e.g., 10 2 x 5 10 ÷ 2 5 x 2 10 ÷ 5

2.05.06

VOCABULARY

TERMS	SYMBOLS
division	÷
inverse operation	

GETTING STARTED

Prepare and distribute a duplicating sheet to each student with examples similar to the ones shown below.

5 x ☐ = 10   ☐ x 4 = 8

Ask the students to complete the sheet independently.

Play "Flash Card Challenge." Divide the class into two teams. Use multiplication flash cards, division flash cards or a combination of both. Show a flash card to a student on the first team. If he/she answers correctly, his/her team gets one point. If the answer is incorrect, the first person on the other team has an opportunity to answer. If the answer is correct that team gets the point. Then that team gets its regular turn.

Continue play until each student has had at least one turn.

2.05.06

2.05.06.01 **recognize the division symbol (÷)**

STRATEGY 1: Write the following symbols on the chalkboard, $\boxed{+}\boxed{-}\boxed{x}$ $\boxed{\div}$. Say, "In writing examples we use symbols for words. Who can tell us the word that the first symbol represents? (plus) When do we use the word plus?" (Plus is used in addition.) Repeat this procedure for minus (-) and times (x). Say, "Who can tell us when we would use the last symbol? (division) This symbol represents the words divided by."

Write the following examples on the chalkboard, e.g.,

$\begin{array}{r}2\\3\overline{)6}\end{array}$ $6 \div 3 = 2$ $\begin{array}{r}2\\2\overline{)4}\end{array}$ $4 \div 2 = 2$

Ask several students to read the examples on the chalkboard. Explain that there are two ways of writing the same division example. Repeat this procedure using these examples.
e.g.,

$5\overline{)20}$ $3\overline{)12}$ $4\overline{)8}$ $3\overline{)9}$

STRATEGY 2: Write the following examples on the chalkboard.
e.g.,

$\begin{array}{r}2\\3\overline{)6}\end{array}$ $6 \div 3 = 2$

Ask a student to read the first example. Say, "Who would like to read the second example?" If after several guesses, no one says 6 divided by 3 equals 2, say, "This is another way of writing the first example. We read this as 6 divided by 3 equals 2." Write other pairs of examples on the chalkboard. Give the students an opportunity to read the examples.

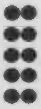
2.05.06

STRATEGY 2: cont'd Write the following examples on the chalkboard, $5\overset{2}{\overline{)10}}$ $3\overset{4}{\overline{)12}}$. Ask several students to come to the chalkboard to rewrite these division examples using the division symbol (÷).

2.05.06.02 **recognize that multiplication and division are inverse (opposite) operations**

STRATEGY 1: Prepare and display a magnetic board and discs to demonstrate the following array.

e.g.,



Elicit 5 x 2 = 10. Ask a student to come to the chalkboard and say, "Divide these discs into five equal groups. Write a division example to show what we have done." ($5\overset{2}{\overline{)10}}$) Ask another student to put the discs back together again. Say, "How would you write an example to show what you have done?" (5 x 2 = 10) Record both examples on the chalkboard.

Repeat this procedure using other examples. Then say, "Division and multiplication are opposite operations." Write the following examples on the chalkboard.

e.g.,

12 ÷ 4 = 3 25 ÷ 5 = 5 8 ÷ 4 = 2

Ask several students to come to the chalkboard to write the multiplication example which is the inverse of each division example.

STRATEGY 2: Write the following on the chalkboard.

e.g.,

3 + 2 = 5 5 - 3 = 2

2.05.06

STRATEGY 2: cont'd

Say, "What does this pair of examples illustrate?" (Addition and subtraction are opposite (inverse) operations.) Ask a student to come to the chalkboard to write another example of addition and subtraction as inverse operations. Repeat this procedure several times. Then say, "Multiplication and division are also inverse operations. Let's see if we can show this." Write the following examples on the chalkboard.

e.g.,

16 ÷ 4 = 4   20 ÷ 4 = 5   8 ÷ 2 = 4   15 ÷ 5 = 3

Say, "What multiplication examples can we show which are the inverse of these division examples?" (4 x 4 = 16, 5 x 4 = 20, 4 x 2 = 8, 3 x 5 = 15)

Repeat this procedure using other examples.

2.05.06.03 **demonstrate related facts for number families**

STRATEGY 1:

Prepare and display ten discs on a magnetic board. Ask a student to come to the chalkboard to divide the discs into two equal groups. Ask another student to come to the chalkboard to record the fact 10 ÷ 2 = 5. Say, "Write the inverse of this example." (2 x 5 = 10) Ask another student to divide the ten discs into five equal groups and record his/her example on the chalkboard. (10 ÷ 5 = 2) Ask another student to come to the chalkboard to record the inverse. (5 x 2 = 10) Say, "What do you notice about all four facts? (All four facts use the same three numbers - 2, 5 and 10.) We call these three numbers a number family."

Write the following number family on the chalkboard, e.g., 3, 4, 12. Ask several students

STRATEGY 1: cont'd

to write the multiplication and division facts for that family on the chalkboard.

Repeat this procedure using other number families.

STRATEGY 2:

Write the multiplication facts for two and four on the chalkboard.

e.g.,

1 x 2 = 2   1 x 4 = 4
2 x 2 = 4   2 x 4 = 8
3 x 2 = 6   3 x 4 = 12
4 x 2 = 8   4 x 4 = 16
5 x 2 = 10   5 x 4 = 20

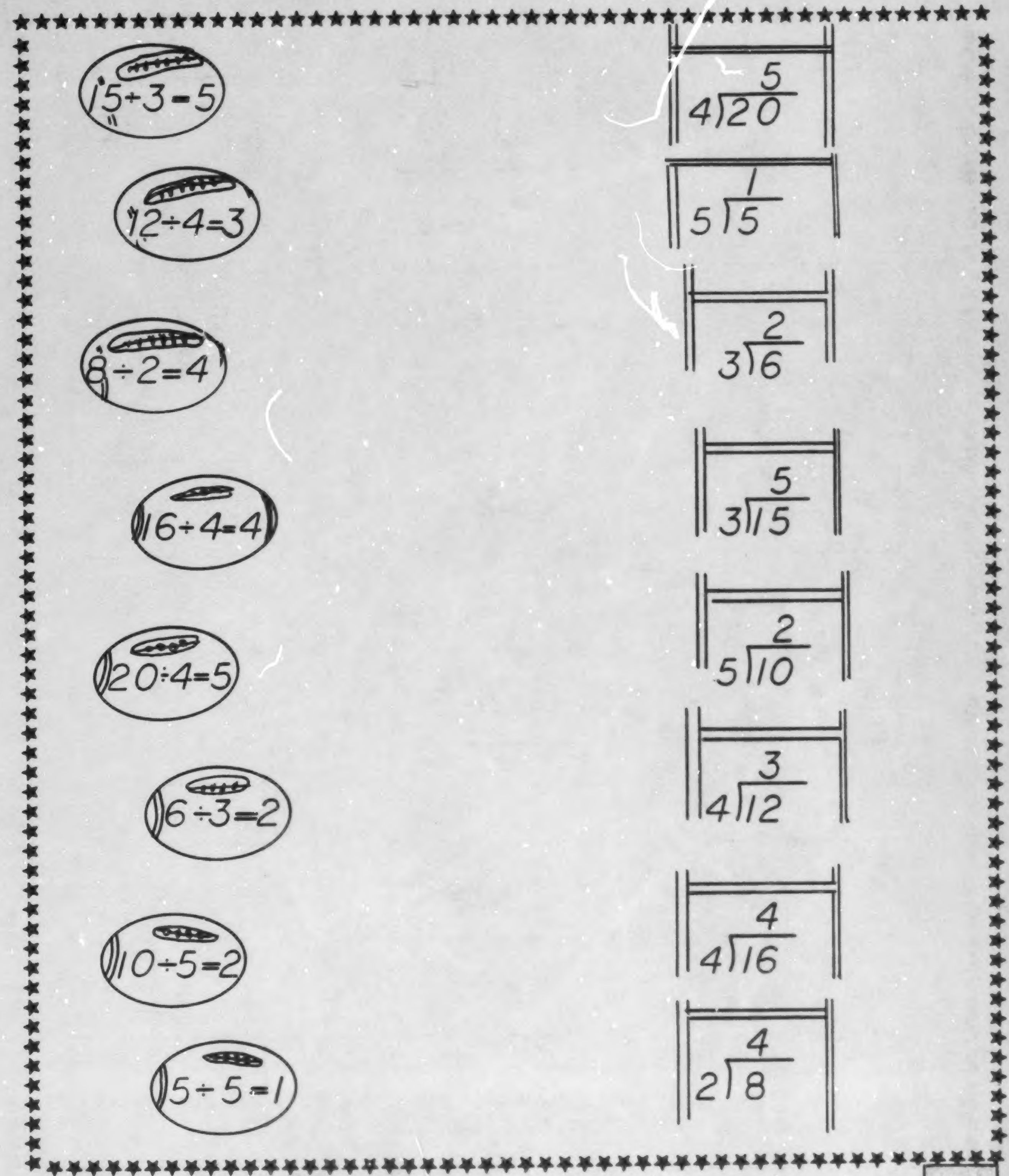
Say, "Can you find a fact in the two times table that is related to a fact in the four times table? (2 x 4 and 4 x 2) Next to 4 x 2 = 8 write the inverse. (8 ÷ 4 = 2) Write the inverse next to 2 x 4. (8 ÷ 2 = 4) What do these four facts have in common? (They all contain the same three numbers - 2, 4 and 8.) We call these three numbers a number family. Another number family is 5, 3, 15. Write the related facts for the number family 5, 3, 15."

Repeat this procedure with other number families.

P.O. 2.05.06.01

NAME: ______________________ CLASS: __________ DATE: ________

Score a goal by matching the division examples.



15 ÷ 3 = 5

12 ÷ 4 = 3

8 ÷ 2 = 4

16 ÷ 4 = 4

20 ÷ 4 = 5

6 ÷ 3 = 2

10 ÷ 5 = 2

5 ÷ 5 = 1

$\begin{array}{r}5\\4\overline{)20}\end{array}$

$\begin{array}{r}1\\5\overline{)5}\end{array}$

$\begin{array}{r}2\\3\overline{)6}\end{array}$

$\begin{array}{r}5\\3\overline{)15}\end{array}$

$\begin{array}{r}2\\5\overline{)10}\end{array}$

$\begin{array}{r}3\\4\overline{)12}\end{array}$

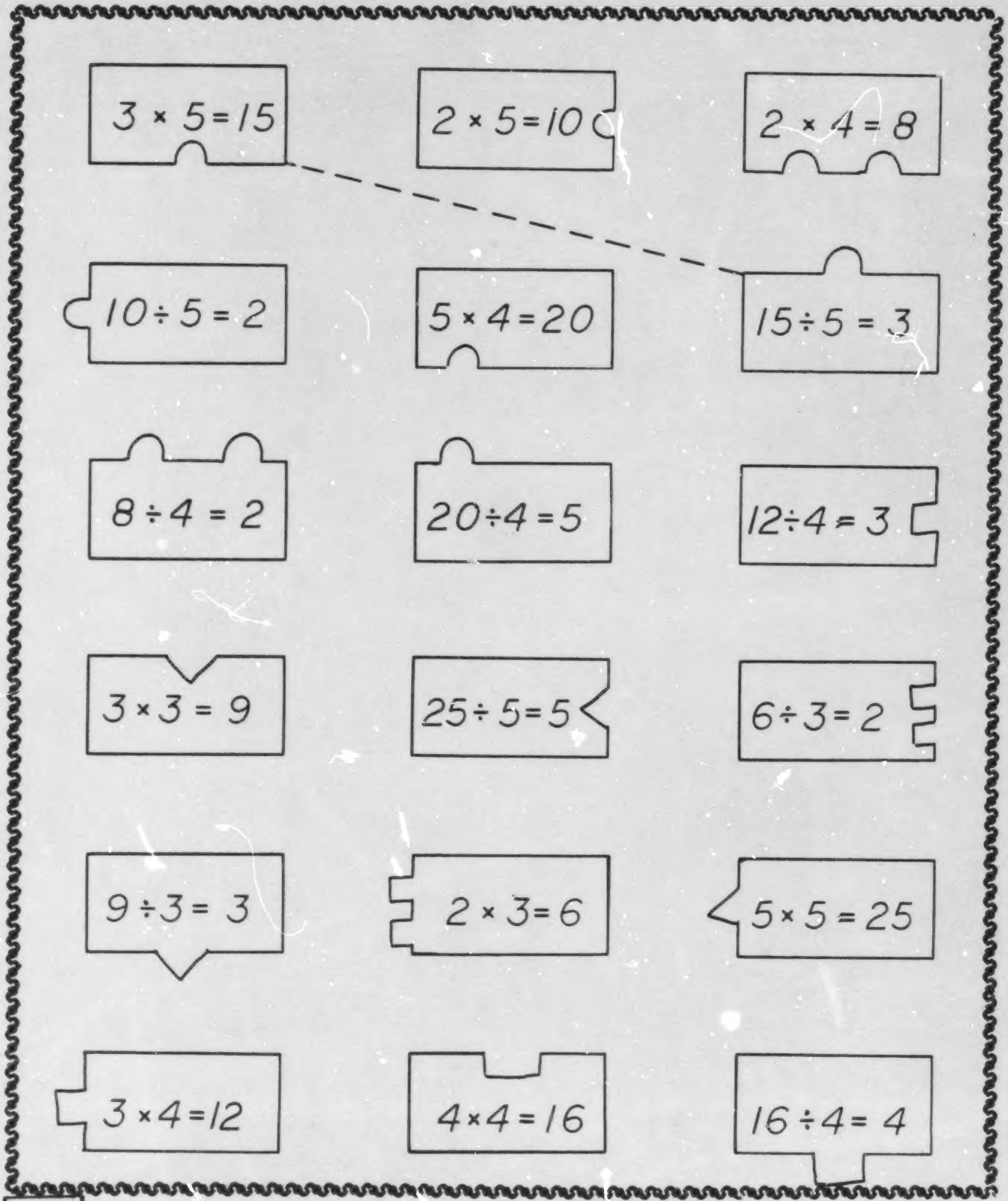
$\begin{array}{r}4\\4\overline{)16}\end{array}$

$\begin{array}{r}4\\2\overline{)8}\end{array}$

P.O. 2.02.06.02

NAME: ________________________ CLASS: __________ DATE: ________

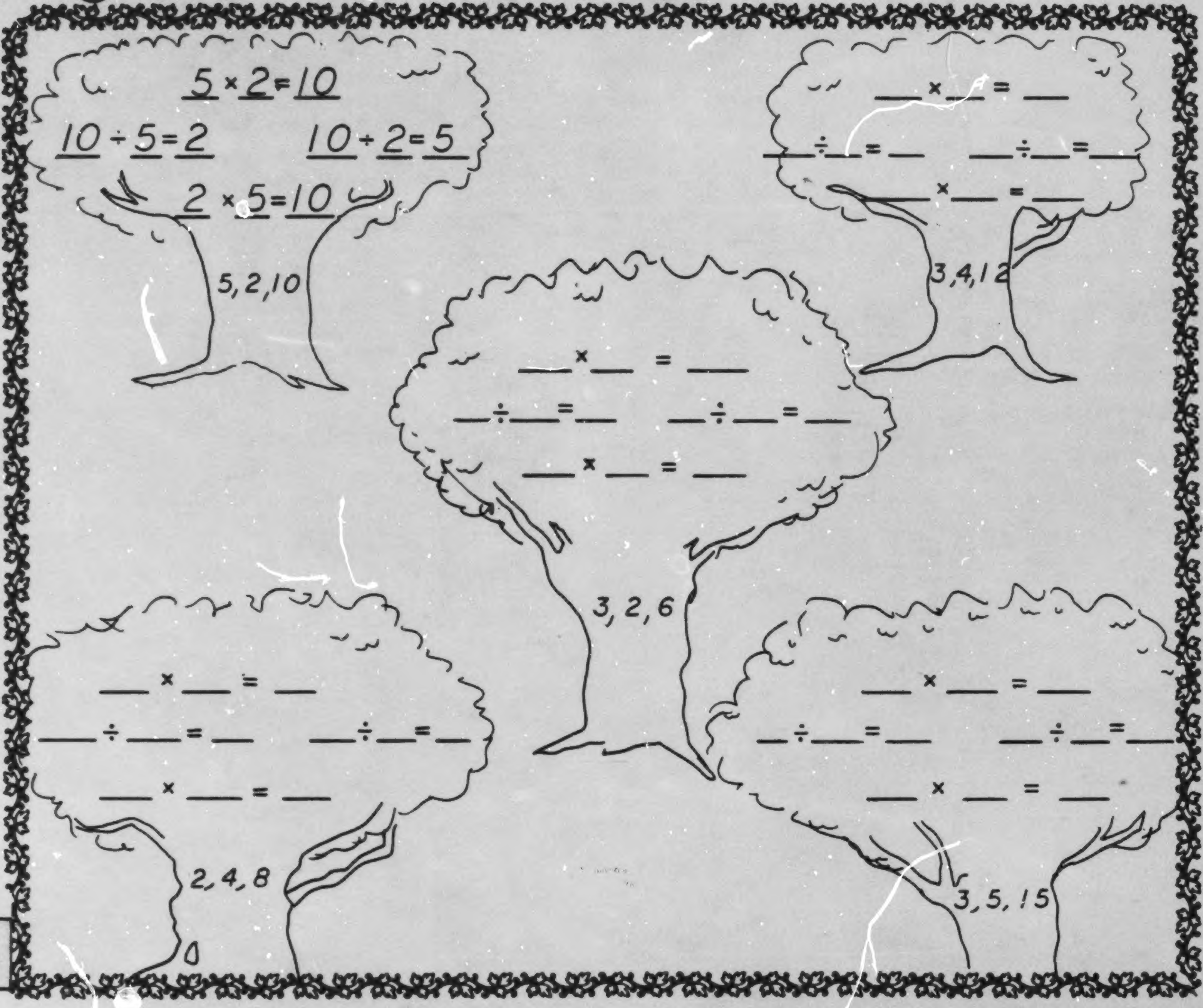
Cut out the puzzle pieces. Put together each pair that shows multiplication and division are inverse operations.


$3 \times 5 = 15$
$2 \times 5 = 10$
$2 \times 4 = 8$
$10 \div 5 = 2$
$5 \times 4 = 20$
$15 \div 5 = 3$
$8 \div 4 = 2$
$20 \div 4 = 5$
$12 \div 4 = 3$
$3 \times 3 = 9$
$25 \div 5 = 5$
$6 \div 3 = 2$
$9 \div 3 = 3$
$2 \times 3 = 6$
$5 \times 5 = 25$
$3 \times 4 = 12$
$4 \times 4 = 16$
$16 \div 4 = 4$

P.O. 2.05.06.03

NAME: ______________ CLASS: ______________ DATE: ______________

Complete the family trees using the numbers given.
The first one is done for you.



5 × 2 = 10
10 ÷ 5 = 2
10 ÷ 2 = 5
2 × 5 = 10
5, 2, 10

___ × ___ = ___
___ ÷ ___ = ___
___ ÷ ___ = ___
___ × ___ = ___
3, 4, 12

___ × ___ = ___
___ ÷ ___ = ___
___ ÷ ___ = ___
___ × ___ = ___
3, 2, 6

___ × ___ = ___
___ ÷ ___ = ___
___ ÷ ___ = ___
___ × ___ = ___
2, 4, 8

___ × ___ = ___
___ ÷ ___ = ___
___ ÷ ___ = ___
___ × ___ = ___
3, 5, 15

2.12.05 RATIO - 2:1 CORRESPONDENCE

(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.12.05.01B use two-to-one correspondence to develop ratio;
e.g.,
2 eyes - 1 person
2 long ears - 1 rabbit

2.12.05.02B use a chart to show ratio.
e.g.,

Number of sandwiches	1	2	3	4	5
Pieces of bread	2	4	6	8	10

No. of bicycles	1	2	3
No. of wheels	2	4	6

357

578

2.12.05

VOCABULARY

TERMS

ratio
two-to-one correspondence
chart

GETTING STARTED

Prepare two sets of objects, e.g., one set with three pencils and the other with four crayons. Say, "Here are two sets. How can we find out which set has more objects without counting each object?" Discuss various possibilities among which are matching one pencil to one crayon. Demonstrate. Ask students to match the remaining pencils and crayons. Say, "How many pencils are left? (0) How many crayons are left? (1) We discovered which set had more by matching the objects."

Repeat this procedure using other groups of objects.

During snack time, prepare straws, cookies, napkins and milk for each student. Ask several students to distribute one of each item to each student. Say, "How many straws are in each container of milk? How many cookies are on each napkin?"

2.12.05

2.12.05.01 **use two-to-one correspondence to develop ratio**

STRATEGY 1: Ask the students to come to the front of the room using a two-to-one correspondence. Say, "John, come to the front of the room and stand here (left side). Stephen and Jane come to the front of the room and stand here (right side). How many students were called to the left side of the room at one time? (1) How many students were called to the right side of the room at one time?" (2) Repeat this procedure until twelve students are standing in front of the room - four on the left side and eight on the right side. Say, "This type of pattern is called a ratio." Write the word ratio on the chalkboard.

STRATEGY 2: Prepare and display a picture of a bicycle. Say, "How many bicycles are in this picture? How many wheels does the bicycle have?" Display a picture of two bicycles. Say, "How many bicycles do you see? How many wheels are there altogether? If there were three bicycles, how many wheels would there be altogether? These pictures show a two-to-one correspondence or ratio." Write the word ratio on the chalkboard. Say, "Who can tell us other examples of a two-to-one correspondence?" (Two faucets to one sink, two slices of bread to one sandwich, two shoes to one pair.)

2.12.05

2.12.05.02 **use a chart to show ratio**

STRATEGY 1: Say, "One way to show a 2 to 1 ratio is to make a chart." Write the following chart on the chalkboard.

e.g.,

Number of Wheels	2	4	6	8	10	12	14
Number of Bicycles	1	2	3	4	5	6	7

Say, "When making a chart, you must be sure to label the parts clearly. Copy the chart from the chalkboard."

Repeat this procedure with another example of a two-to-one correspondence.

STRATEGY 2: Say, "I'm going to demonstrate a two-to-one ratio using students." Ask a student to keep a record of the ratio on the chalkboard. Draw the following chart on the chalkboard:

e.g.,

Number of Boys _______________________
Number of Girls_______________________

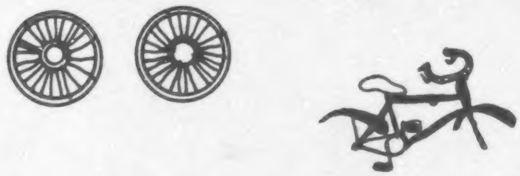
Ask two boys to come to the right side of the room, and one girl to come to the left side of the room. Ask the student at the chalkboard to record the numbers. Repeat this procedure until the chart is completed. Say, "Do you see a pattern?" Ask a student to explain the pattern.

P.O. 2.12.05.01

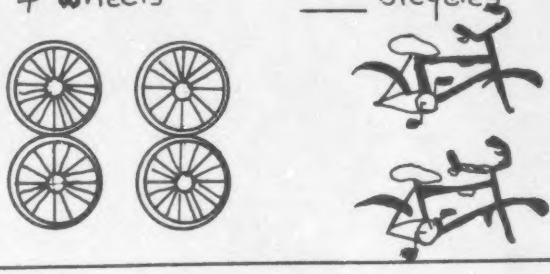
NAME:______________________ CLASS:________ DATE:________

Fill in the blanks to continue the two-to-one ratio (correspondence).

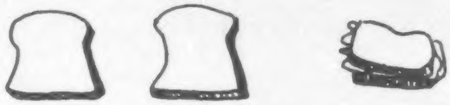
2 wheels 1 bicycle



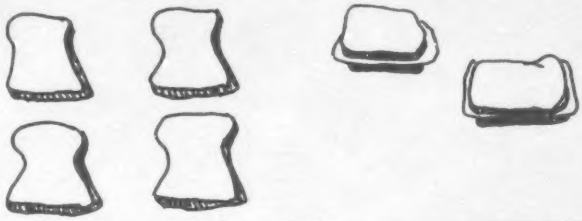
4 wheels ___ bicycles



2 slices of bread 1 sandwich

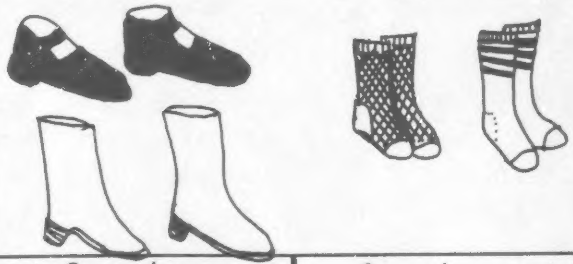


4 slices of bread ___ sandwiches

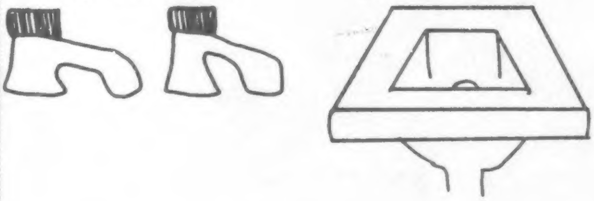


2 shoes 1 pair of socks

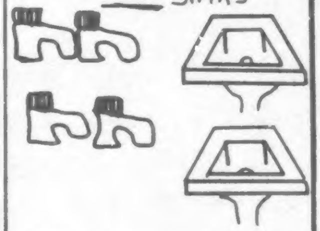
___ shoes 2 pairs of socks



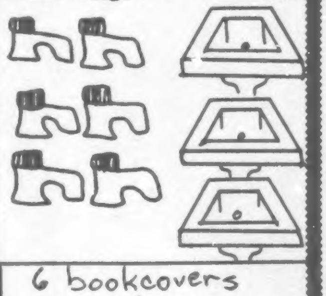
2 faucets 1 sink



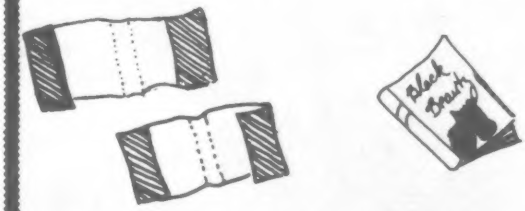
4 faucets ___ sinks



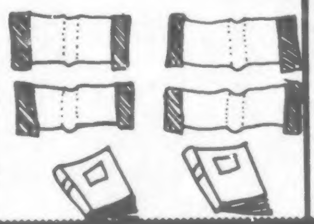
___ faucets 3 sinks



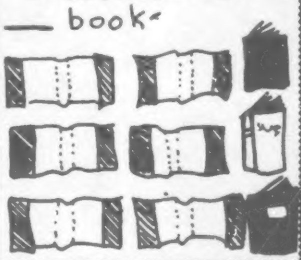
2 bookcovers 1 book



___ bookcovers 2 books



6 bookcovers ___ book

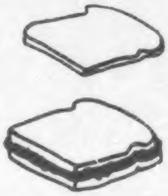


P.O. 2.12.05.02

NAME: ______________________ CLASS: ________ DATE: _______

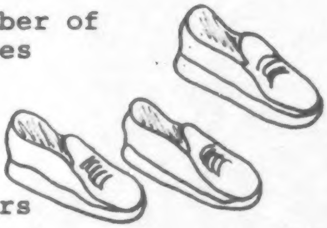
Complete the given chart to show a two-to-one ratio.

Number of Wheels	2					
Number of Bicycles	1					



Slices of Bread	2	4				
Sandwiches		2				

Long Ears		4		8		
Rabbits	1	2				6



Number of Shoes		4			10	
Pairs		2	3			

2.10.14 DECILITER

(1 lesson)

PERFORMANCE OBJECTIVES

The student will be able to...

2.10.14.01C identify relationships between a liter and a deciliter;

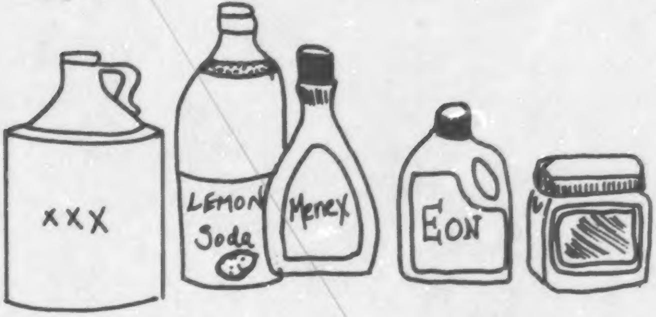
e.g.,

A deciliter is one tenth of a liter.

10 deciliters = 1 liter

*2.10.14.02A estimate capacity using different metric units.

e.g.,



363

2.10.14

VOCABULARY

TERMS	SYMBOLS
liter	
deciliter	

GETTING STARTED

Prepare and display three containers of the same size. Fill one container to the top, one half full and the third leave empty. Say, "Which container is full? Which container is empty? Which container is half full?"

Repeat this procedure until all of the students have had a turn.

Prepare and display five containers. Hold up one container. Say, "Do you think this container will hold a liter?"

Repeat this procedure with the other containers.

2.10.14

2.10.14.01 **identify relationships between a liter and a deciliter**

STRATEGY 1: Prepare and display a liter container and a deciliter measuring cup. Explain that in some countries they use metric units of measure. Display the liter and deciliter containers. Name the containers and explain that people use these as standard units. Fill the deciliter container with water. Ask the students to estimate how many deciliters will fill one liter. Ask a student to demonstrate by pouring water from the deciliter into the liter container. Say, "There are 10 deciliters to 1 liter."

STRATEGY 2: Prepare and display liter and deciliter containers and water. Divide the students into groups. Provide each group with water, a liter and a deciliter container. Ask the students to identify both the liter and the deciliter containers. Ask the students to experiment to find out how many deciliters of water a liter container will hold. (The liter should hold 10 deciliters.)

2.10.14.02 **estimate capacity using different metric units**

STRATEGY 1: Prepare and display liter containers, metric cups, and other containers of various sizes and water. Say, "What would we use these metric containers for?" (measuring liquids) Display a liter and then show another container. Say, "How much liquid do you think this container will hold; a liter, more than a liter, or less than a liter?"

2.10.14

STRATEGY 1: cont'd

Fill the liter container with water and then transfer the water into the container to find how much the container will hold.

Repeat this procedure with the metric measuring cup. Discover how many cups will fill certain containers.

STRATEGY 2:

Prepare a number of metric containers, e.g., liter and metric measuring cups. Distribute the cups to groups of students. Hold up various cups and containers and ask the students to estimate and record how much liquid they think each container holds.

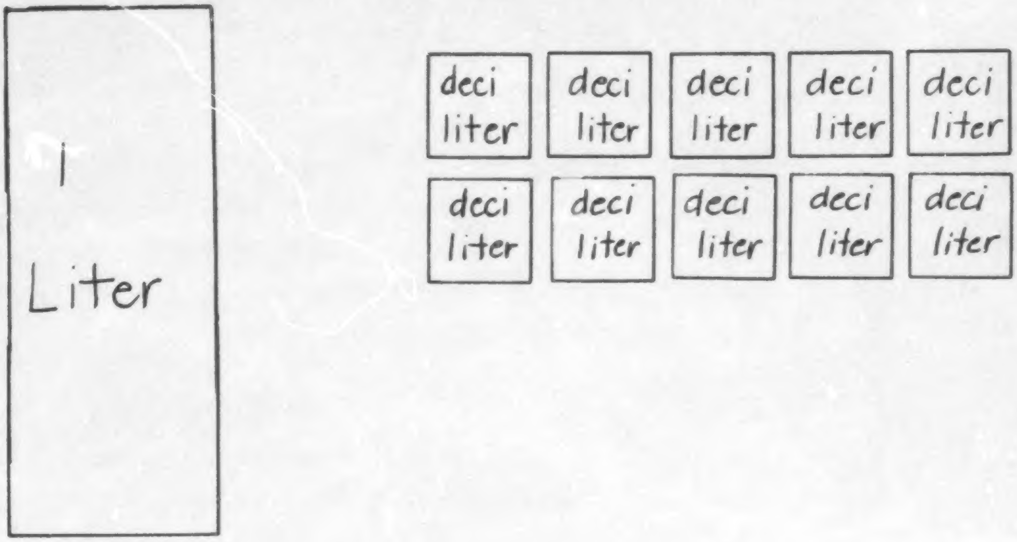
e.g.,

About 1 liter	More than 1 liter	Less than 1 liter

P.O. 2.10.14.01

NAME: ______________________________ CLASS: ________ DATE: _______

Circle the number of deciliters to equal 1 liter and then fill in the blanks.


1
Liter
deci liter
deci liter
deci liter
deci liter
deci liter
deci liter
deci liter
deci liter
deci liter
deci liter

One liter is equal to _____ deciliters.

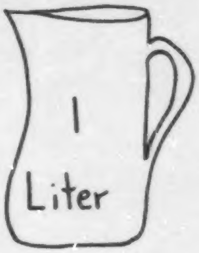
Two liters are equal to _____ deciliters.

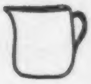
A deciliter is _____ of a liter.

P.O. 2.10.14.02

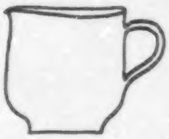
NAME: ______________________ CLASS: __________ DATE: ________

Which would you measure each with-a liter or a deciliter?





1 deciliter



making a recipe

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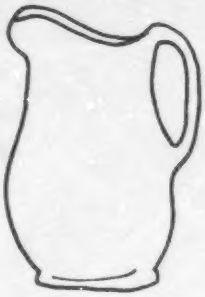

bringing ice tea to a picnic

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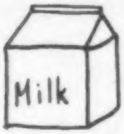

milk at lunchtime

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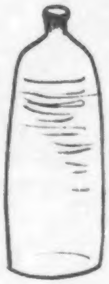

a large bottle of soda

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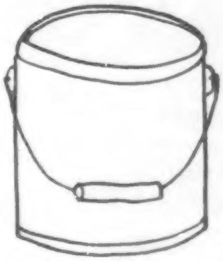

a can of paint

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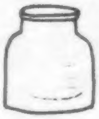

a jar of mustard

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